

ABSTRACT

Purpose: 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.

INTRODUCTION

Interactive Metronome: Interactive Metronome® (IM) is a switch-activated computer program that uses the brains neuroplasticity to improve coordination and timing. IM relies on the body's internal rhythm and reaction to feedback in order to retrain the brain for motor behavior.

Stroke: Stroke is the leading cause of disability in the United States. With new technology, more individuals are surviving stroke, which is driving up healthcare costs. Specifically, occupational therapists focus on upper extremity functioning, fine motor skills, and cognitive functioning for participation in activities of daily living (ADLs) and other occupations, which makes IM a valuable tool in occupational therapy.

METHODS & INSTRUMENTATION

Each of the studies that were conducted were done follow the same methods and design. A baseline pre test was given on each participant. These included the IM Long Form and different standardized instruments. The most consistent of these was the Nine Hole Peg test; which was used with all groups of participants and studies. In addition each participant followed pre-established protocol. The protocols were established based on a piloted project measuring stamina and endurance of 12 individuals over the age of 65 as well as length of time constraints established by third party payers. In addition surveys identifying personal opinion of the participants perception of change were conducted.

DISCUSSION

It might be inferred that the IM is a justifiable intervention to use with individuals post-stroke for improving fine motor capabilities. While no statistical significance was found for the NHPT, the t-value was notable and findings identified were very close to being significant. However, the data is still clinically meaningful because it suggests a correlation between using the IM and improved scores on the NHPT. While this trend in improvement still needs to be researched further, it suggests that there may be increased fine motor function after using IM. The survey indicated an overall perception by the participants' belief that the IM is an effective treatment in therapy. Results of the survey showed that the participants would be willing to continue use of the IM, even if it required a reasonable fee. While this trend in improvement still needs to be researched further, it suggests that there may be increased fine motor function after using IM.

The researcher notes that while the IM can be shown to be an effective modality for use in clinic settings it should be used in conjunction with more occupational based interventions.

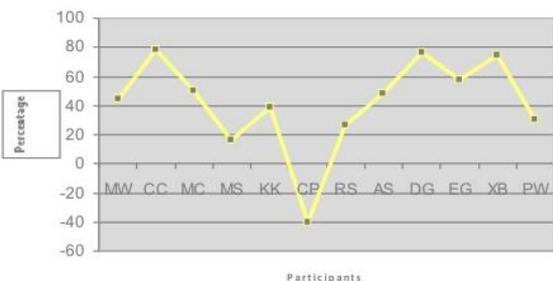
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RESULTS of Multiple Pilots

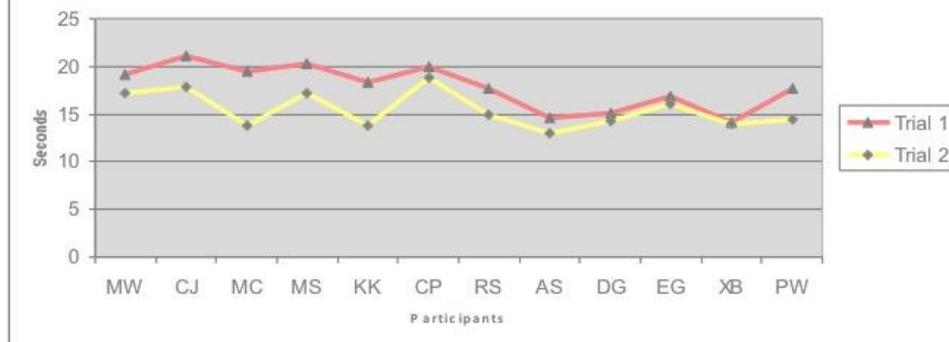
Measurement on IM Change

Percent of Improvement for the IM



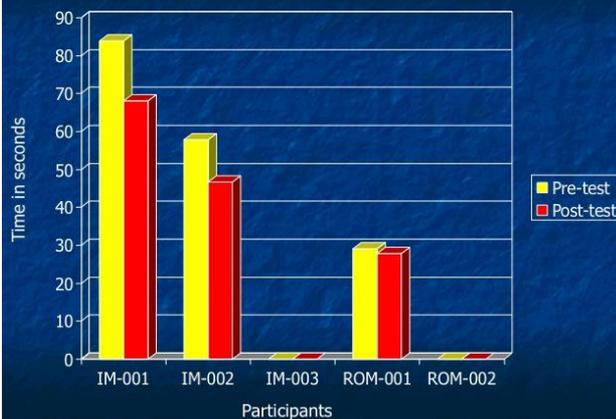
This study looked at normal individuals over the age of 55 and compared pre and post test IM scores and those of the NHPT. Notable improvements ave. 24% and above were achieved.

Right Hand Improvement



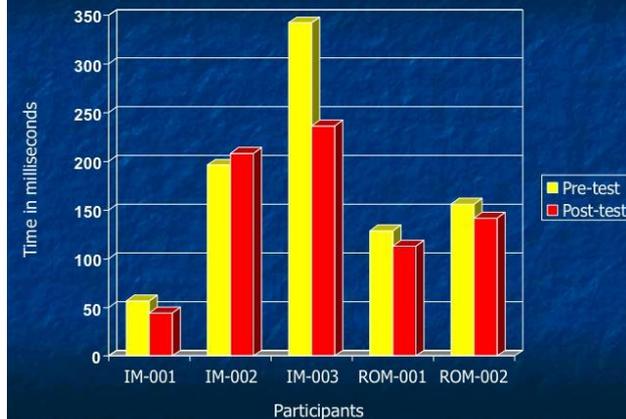
This study compared those clients following standard of care Active ROM exercise program compared to those who received the IM for 8 sessions. Data from this pilot study indicated that participants made significant improvements as measured by the NHPT as well as the IM Long Form.

Nine-Hole Peg Test – Affected hand
Pre-test VS Post-test 3-trial Average

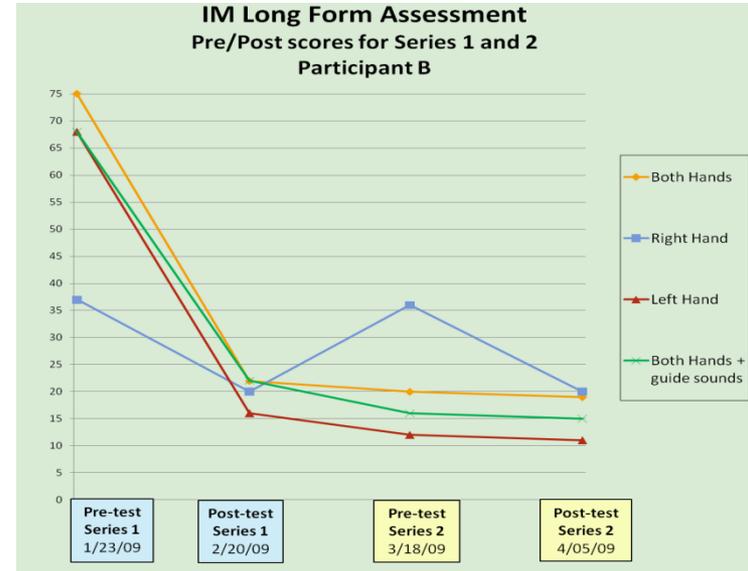
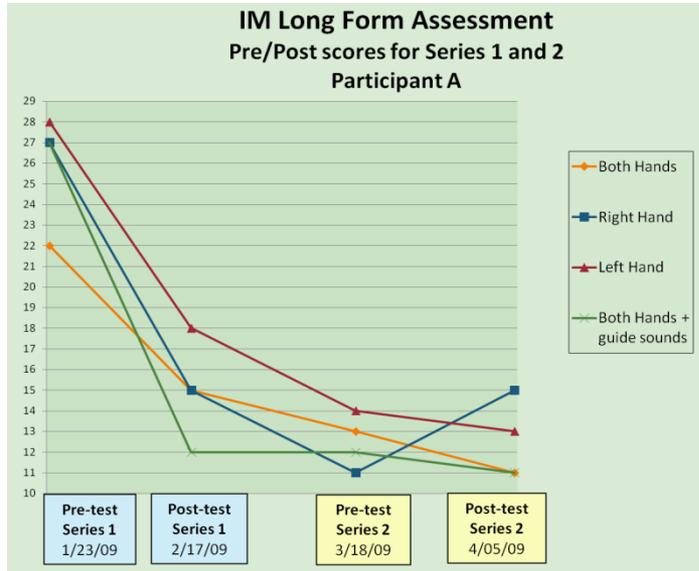


Participants who followed the Active ROM Protocols also showed improvements - this was anticipated as it is an acceptable standard of care and as such outcomes should demonstrate positive change. However the percentage of change was 24% for the IM participants as compared to 10% following the in home ROM

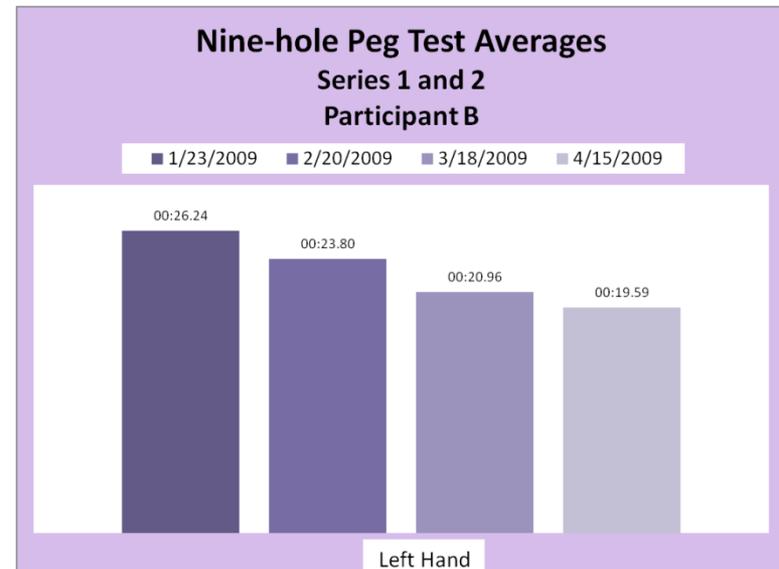
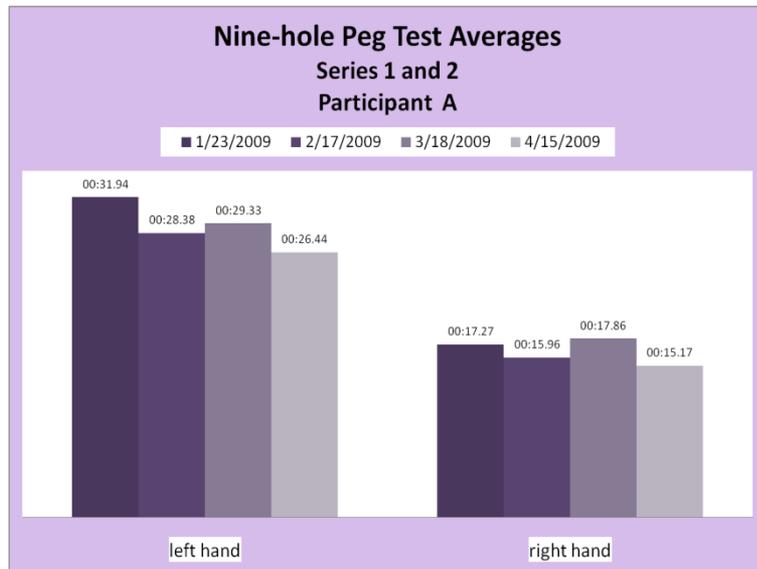
Interactive Metronome Long-form Assessment
Pre-test VS Post-test Total Unadjusted Average



RESULTS of Multiple Pilots



This study looked at 2 CVA cases – Both making notable changes with 30 days longevity retest and 2nd series of IM provided demonstrated performance improvement

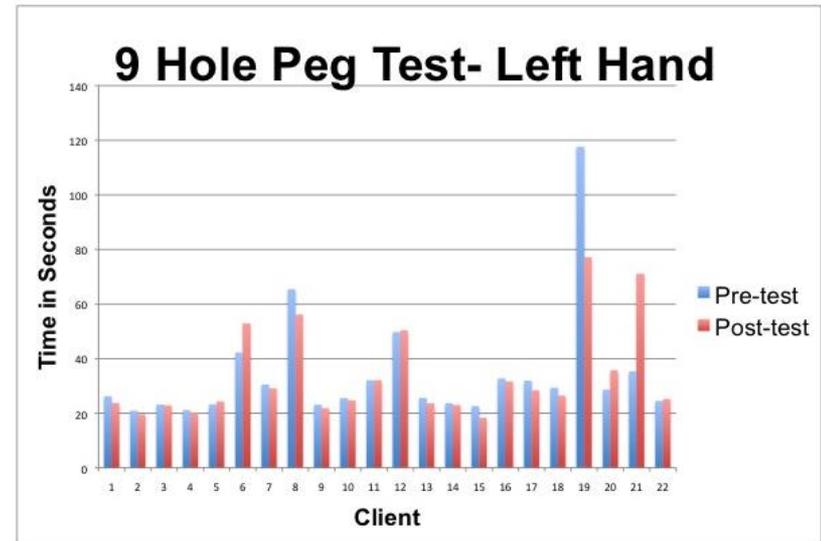
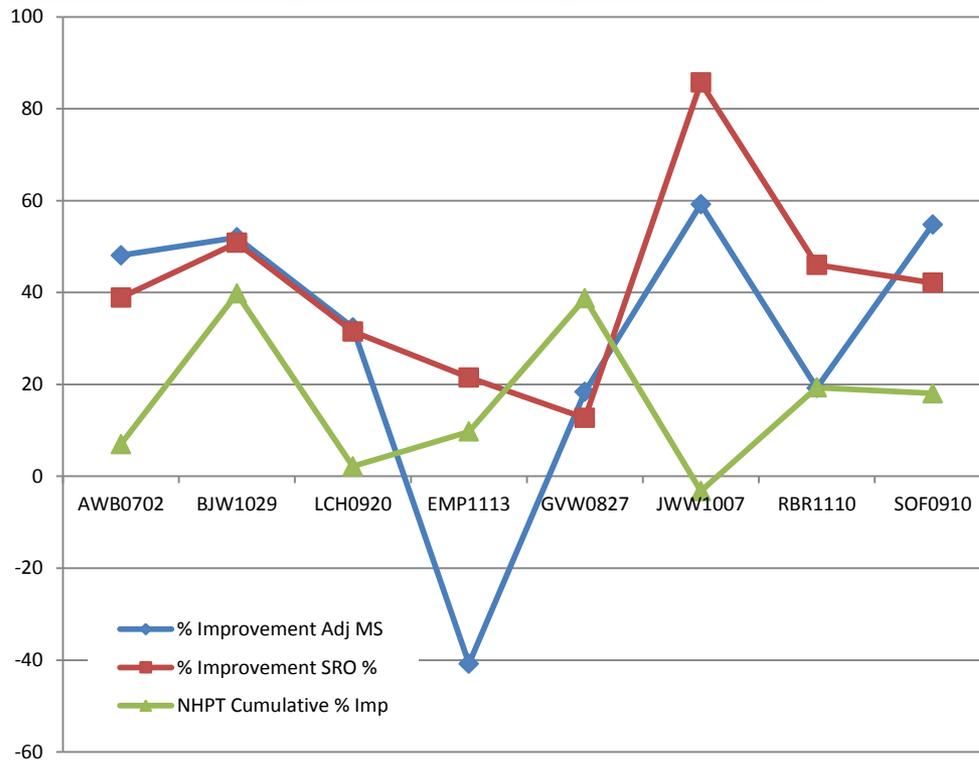


RESULTS of Multiple Pilots

Results: Descriptive Statistics

	Post CVA	Healthy Individuals
Mean % Improvement Adj MS Average	30.4%	53.7%
Mean % Improvement on SRO %	41.1 %	56.9%
Mean % NHPT Cumulative Improvement	16-4 %	26.5%

Positive outcomes in both Post CVA and Healthy Individual groups
 No significant differences in percentage of improvement between groups
 Indicates IM may be just as effective with individuals who are post-CVA as in healthy aging individuals
 Low to no correlation between LFA and NHPT



The sample size for this subtest was 22. These subjects were able to complete both the pre and post tests for the NHPT. Subjects who could not complete both were omitted. The t-value came close to being statistically significant at 0.896. While not statistically significant, this does suggest a correlation between using the IM improved scores on the NHPT.