

## PRODUCTS AT WORK

# Enhancing Skills

Research study shows how Interactive Metronome can improve finger dexterity.

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**T**he baby boomer generation is aging. As of 2004, there were 36.3 million people over the age of 65 in the United States.<sup>1</sup> By 2050, it's estimated that this number will hit 52 million.<sup>1</sup> At age 65, declines in motor function begin to occur, such as weakness, slowed movements and reduction in force control, and the impact on all areas of occupational performance is noticeable.<sup>2</sup>

The baby boomer population has shown its willingness to consider alternative methods for maintaining and improving their health. To meet the demand, clinicians must develop standardized measurable assessments and interventions that address this population.

As such, we conducted a study that focused on improving finger dexterity by administering the nine hole peg test after Interactive Metronome (IM) treatment. The IM program provides a structured, goal-oriented process that challenges participants to synchronize hand and foot exercises to a computer-generated reference tone that's heard through headphones. A patient attempts to match the rhythmic beat with repetitive motor actions.

An audio or audio and visual guidance system provides immediate feedback that's measured in milliseconds, and a score is provided. We chose the IM program due to its potential ability to improve "an individual's fundamental neurological and motor information processing, planning and sequencing, and attentional capacities."<sup>3</sup>

The purpose of our study was to determine if the IM is an effective treatment tool to increase finger dexterity in older adults. The assumption was that if we could measure improvements using an accepted standardized instrument,

aging adults could be more efficient with other daily tasks, such as driving.

The design of our study included an IM pre-test/post-test and the nine hole peg test pre-test/post-test. The nine hole peg test is a quick, portable and convenient assessment that's used to evaluate finger dexterity.<sup>4</sup> The independent variable was the IM treatment and the dependent variable was finger dexterity, as demonstrated by nine hole peg test results.

Study participants varied in gender and ethnicity, and ranged from ages 55 to 68. Inclusion criteria included: the ability to follow verbal directions; the motor ability to perform fine motor tasks; the ability to initiate and sustain repetitive movements; a lack of previous conditions that affected motor and cognitive performance in the IM; tolerance to

wear headphones; the desire to complete IM treatment; and the ability to speak English. The study excluded anyone with visual or hearing impairments severe enough to jeopardize or interfere with IM treatments.

Each participant completed eight IM sessions, which followed a protocol established in a former pilot study with older adults. All IM activities were completed while sitting in a chair, rather than standing.

Participants' test scores on the first and last days were compared to determine the amount of change in finger dexterity. The nine hole peg test provided necessary outcomes comparisons and all participants improved.

These findings indicate an increase in finger dexterity among the IM participants for both hands. Both hand times improved significantly

with the nine hole peg test after IM treatment, which indicates that IM treatment can impact and improve finger dexterity. However, further research is needed to increase the validity and applicability to other populations. ■

For a list of references and resources, go to [www.advanceweb.com/rehab](http://www.advanceweb.com/rehab) and click on the references toolbar.



**A patient attempts to synchronize hand and foot movements using the Interactive Metronome.**

Courtesy/Leonard G. Trujillo

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