Using Neuroplasticity to Help You Now

Presented by Resident Dr John Sturt, &
Gerry Brawn-Douglas
Director of Brain Time Ltd
A Company Focused on Bringing
Interactive Metronome®
To New Zealand
Contact: 0800 BRAINZ (0800 272-469)
Hillary Village Resident Contact: Dr John Sturt 570-6657
“Close your eyes & imagine you are the ruler of an ancient empire…” click on the following link to see the script read for this exercise

http://braintime.co.nz/more-info/imaginary-exercise/
“We are Fearfully & Wonderfully Made”
Psalm 139:14
We are Fearfully & Wonderfully Made
We are Fearfully & Wonderfully Made
Bette Kalman -83 years old
We are Fearfully & Wonderfully Made
Hearing: 35,000-50,000 neurons per ear
Sight: 770,000-1.7 million nerve fibers in the optic nerve
Touch: 17,000 receptors in the hand
Interactive Metronome® recalibrates the precision timing needed by your brain to deal with all this data.
Interactive Metronome® & Neuroplasticity

Interactive Metronome® stimulates numerous neural networks simultaneously, in a manner that requires
(1) Intense conscious focus
(2) Instantaneous performance feedback
(3) Extended repetition and
(4) Frequent practice exposure
This evokes neuroplastic change that improves Temporal Processing
Interactive Metronome® - Applications

<table>
<thead>
<tr>
<th>ADHD &amp; ADD</th>
<th>Dyspraxia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asperger’s</td>
<td>Memory Problems</td>
</tr>
<tr>
<td>Auditory Processing</td>
<td>Post Concussion Syndrome</td>
</tr>
<tr>
<td>Autism</td>
<td>Reading</td>
</tr>
<tr>
<td>Balance &amp; Gait (prevents falls)</td>
<td>Sports performance (e.g. golf)</td>
</tr>
<tr>
<td>Basic Math</td>
<td>Stroke Recovery</td>
</tr>
<tr>
<td>Dyslexia</td>
<td>Untidy Handwriting</td>
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Interactive Metronome® -Applications
-Live Links Below

- Stroke Recovery
  - http://www.youtube.com/watch?v=IyMRF3haECw&feature=player_embedded#t=0

- Other Examples from TV News Items:
  - http://braintime.co.nz/more-info/videos/

- Alzheimer’s Recovery Case Study
  - http://braintime.co.nz/more-info/kathy-alzheimers-case-study/

- More Case Studies, & Research:
  - http://braintime.co.nz/the-research/
John’s Fall & Recovery: Falls for Older Adults - a Big Problem

Fear of falling leads to restricted activities

Which leads to reduced mobility & fitness

Ultimately increasing the risk of falling
John’s Fall & Recovery: Falls for Older Adults - a Big Problem

- Between 1999 and 2008, death from falls for those over 65yrs increased 1.6 times, from 48.2 per 100,000 people, to 77.0 per 100,000
John: Falls for Older Adults - a Big Problem

- The rate of fatal falls has recently overtaken the rate of fatal road crashes in NZ
- Falls are the leading cause of fatal injuries among older adults in NZ, and of hospitalisation for injury among all ages
Interactive Metronome®: A New Research-based Approach to Fall Prevention

- Working memory capacity is an integral part of addressing fall prevention
- The old concept that gait and balance are automatic activities that do not require cognitive resource, is a fallacy.
Healthy adults use different strategies to retain upright posture while performing cognitive tasks, than older cognitively impaired adults.
Dual-Tasks: Posture/Balance + Cognitive Task

When Faced with Dual Tasks, Healthy Younger Adults:
- Slow down the neural traffic for cognition
- Keep the same neural traffic going to retain posture and balance
- No increase in fall risk

When Faced with Dual Tasks, Older Cognitively Challenged Adults:
- Slow down the neural traffic for cognition
- Slow down the neural traffic going to posture & balance
- Increased fall risk!
Dual-Tasks: Posture/Balance + Cognitive Task

- Research indicates that poor cognitive processing and divided attention contribute to the risk of falls.
- A fall prevention program that excludes assessment and treatment of cognitive deficits is incomplete, in addressing the risk of falling.
Dr John Sturt: Interactive Metronome® Demonstration
# Dr John Sturt: Sample Session Data Detail - 17/01/13

## IM-Home Training Session Data Detail

<table>
<thead>
<tr>
<th>Trainee ID: john03</th>
<th>Report Date: 09/11/2013</th>
<th>Training Date: 01/17/2013, Total Raps Hit / Assigned: 581 / 701</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Hostware</th>
<th>Training Plan</th>
<th>Session</th>
<th>Task</th>
<th>Mode</th>
<th>Training Type</th>
<th>Exercise</th>
<th>Raps Hit / Assigned</th>
<th>Tempo</th>
<th>Guide Sounds</th>
<th>Difficulty</th>
<th>Visual Indicator</th>
<th>Avg (MS)</th>
<th>Var Avg (MS)</th>
<th>SRO %</th>
<th>Burst</th>
<th>IAR</th>
<th>Early/Late Hits %</th>
<th>Family Comments</th>
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<tbody>
<tr>
<td>IM-Home</td>
<td>SF + Hands + Toes + Heels + Bilateral B...</td>
<td>4</td>
<td>1</td>
<td>Auto</td>
<td>RT</td>
<td>1 - Both Hands</td>
<td>81 / 101</td>
<td>54</td>
<td>On</td>
<td>150</td>
<td>Auditory default</td>
<td>92.23</td>
<td>93.00</td>
<td>19.75%</td>
<td>0</td>
<td>2</td>
<td>69.14% / 30.86%</td>
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<tr>
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<td>SF + Hands + Toes + Heels + Bilateral B...</td>
<td>4</td>
<td>2</td>
<td>Auto</td>
<td>RT</td>
<td>4 - Both Toes</td>
<td>85 / 100</td>
<td>54</td>
<td>On</td>
<td>150</td>
<td>Auditory default</td>
<td>84.20</td>
<td>61.00</td>
<td>8.24%</td>
<td>0</td>
<td>2</td>
<td>72.94% / 27.06%</td>
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<td>3</td>
<td>Auto</td>
<td>RT</td>
<td>7 - Both Heels</td>
<td>92 / 100</td>
<td>54</td>
<td>On</td>
<td>150</td>
<td>Auditory default</td>
<td>124.66</td>
<td>99.00</td>
<td>2.17%</td>
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<td>4</td>
<td>Auto</td>
<td>RT</td>
<td>10 - Right Hand / Left Toe</td>
<td>91 / 100</td>
<td>54</td>
<td>On</td>
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<td>102.67</td>
<td>67.00</td>
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<td>5</td>
<td>Auto</td>
<td>RT</td>
<td>11 - Left Hand / Right Toe</td>
<td>70 / 100</td>
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<td>105.44</td>
<td>68.00</td>
<td>8.57%</td>
<td>0</td>
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<td>74.29% / 25.71%</td>
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<td>SF + Hands + Toes + Heels + Bilateral B...</td>
<td>4</td>
<td>6</td>
<td>Auto</td>
<td>RT</td>
<td>12 - Balance Right Foot / Tap Right Toe</td>
<td>38 / 50</td>
<td>54</td>
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<td>105.50</td>
<td>65.00</td>
<td>13.16%</td>
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<td>73.68% / 26.32%</td>
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<td>7</td>
<td>Auto</td>
<td>RT</td>
<td>13 - Balance Left Foot / Tap Left Toe</td>
<td>28 / 50</td>
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<td>139.54</td>
<td>69.00</td>
<td>3.57%</td>
<td>0</td>
<td>1</td>
<td>92.86% / 7.14%</td>
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<td>4</td>
<td>8</td>
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<td>RT</td>
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<td>96 / 100</td>
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<td>79.92</td>
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<td>9.38%</td>
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<td>87.50% / 12.50%</td>
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</table>

Training Type: SF = Short Form Testing, LF = Long Form Assessment, RT = Regular Training, GM = IM-Motion (Gait Mate), AO = Attend Over Time
Dr John Sturt: increased accuracy for timing Basic Hand Clap, as shown by a decreasing millisecond average over 28 + 3 trials
Dr John Sturt: increased accuracy for timing Both Heels, shown in decreasing Millisecond average over 15 + 3 trials
Dr John Sturt: increased accuracy for timing Balance Right Foot/Tap Left Toe, shown by a decreasing millisecond average over 34 + 3 trials.
Dr John Sturt: increased accuracy for timing Balance Left Foot/Tap Right Toe, shown by a decreasing millisecond average, over 34 + 3 trials
Concluding Summary

Interactive Metronome® is a valuable tool to include in a fall prevention program because it enhances working memory through improving:

- Cognitive Processing
- Directed Attention
- Motor Control
- Sequencing
- Timing
Further Information

Village Contact
Dr John Sturt 570-6657
Brain Time Ltd
Gerry Brawn-Douglas
0800-BRAINZ (0800 272-469)

Brain Time Ltd is offering Hillary Village residents the 8 week tuition program at the reduced price of $1775 until Wednesday the 25th of September (saving $275)


