Evaluating the Success of my Neuro-Cognitive Training Program

William Yeates
Board Member/ Vice Chair
Dementia Alliance International
In July of 2019, at the age of 59, I was diagnosed with Younger Onset Alzheimer’s Disease.

- Shell shocked
- Lost confidence in myself
- Disillusioned with life
- Withdrew from involvement in the wider community
- Darkness surrounding me
South Curl Curl Surf Lifesaving

Support and Advocacy, of, by and for people with dementia

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South Curl Curl Surf Lifesaving

1. 100 metre run along sand
2. 100 metre swim to buoy
3. 100 metre swim back to beach (200 metre swim)
4. 100 metre run along sand
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My presentation today is about evaluating how my participation in this Neuro-Cognitive Training Program has allowed me to start competing in Master’s Swimming and Surf Lifesaving (Open Water and Pool Rescue).

Due to its structured approach, I chose the Goal Attainment Scaling (GAS) method as I wanted to target the goals that I had set myself in relation to:

• The type of championships that I wanted to compete in (local, state, national and international)
• The type of events that I wanted to participate in
• The times/places that I achieved
What is the Goal Attainment Scale (GAS)?
Each goal is rated using a five-point numerical scale where:

-2 much less than expected
-1 less than expected
0 expected level (baseline)
+1 better than expected
+2 much better than expected

Main Advantage
It has allowed me to track the progress of achieving my goals over a period of time.
Goal Attainment Scaling

• Explanation of formula:

\[
50 + \frac{10\sum(W_iX_i)}{[(1 - \rho)\Sigma W_i^2 + \rho (\Sigma (W_i)^2)]^2}
\]

• \(W_i\) is the weight assigned to each goal (relative importance \(\times\) degree of difficulty using a scale of 1-3)
• \(X_i\) is the numerical value of the level of attainment
• \(\rho\) is the estimated correlation between the goal scores – assumed to have constant value of 0.3
• \(\Sigma W_i^2\) is the sum of each weighted value squared
• \((\Sigma (W_i)^2)\) is the sum of all the weighted values squared

Therefore, based on this equation:

• If you only achieve your baseline, your score will be 50.
• If you achieve more than your baseline, your score will be greater than 50.
Goals – Championships entered

• **Goal 1** - To be able to compete in masters Swimming Championships by the end of 2022

• **Goal 2** - To be able to compete (paddle a racing mal) in masters Surf Lifesaving Championships by the end of 2022

• **Goal 3** - To be able to compete in masters Pool Rescue Championships by the end of 2022
Goal 1 - To be able to compete in **Masters Swimming Championships** by the end of 2022

- **Training**
  - Local
  - State
  - National
  - International

- **Baseline (0)**
- **Attainment**:
  - Local: -2
  - State: -1
  - National: +1
  - International: +2
Goal 2 - To be able to compete (paddle a racing mal) in Masters Surf Lifesaving Championships by the end of 2022
Goal Attainment Scaling

Goal 3 - To be able to compete in **Masters Pool Rescue Championships** by the end of 2022

<table>
<thead>
<tr>
<th>Level</th>
<th>Attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>+ 2</td>
</tr>
<tr>
<td>National</td>
<td>+ 1</td>
</tr>
<tr>
<td>State</td>
<td>0</td>
</tr>
<tr>
<td>Local</td>
<td>-1</td>
</tr>
<tr>
<td>Training</td>
<td>-2</td>
</tr>
</tbody>
</table>

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Goal Attainment Scaling

Goal 1: Master’s Swimming
Goal 2: Master’s Surf Lifesaving
Goal 3: Master’s Pool Rescue

Baseline

International
National
State
Local
Training

Attainment

+ 2
+ 1
0
-1
-2

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# Goal Attainment Scaling - International Championships

<table>
<thead>
<tr>
<th></th>
<th>Importance</th>
<th>Difficulty</th>
<th>Weight ($W_1$)</th>
<th>Outcome ($X_1$)</th>
<th>$10\Sigma(W_1X_1)$</th>
<th>$\Sigma W_1^2$</th>
<th>$(\Sigma W_1)^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 1</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>Goal 2</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>12</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>Goal 3</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>18</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>360</td>
<td>153</td>
<td>$(21)^2 = 441$</td>
</tr>
</tbody>
</table>

\[
50 + \frac{10\Sigma(6 + 12 + 18)}{[(0.7)(36 + 36 + 81) + 0.3(21^2)]^{\frac{1}{2}}} = 50 + \frac{360}{[(0.7)(153) + 0.3(441)]^{\frac{1}{2}}} \approx 73.29
\]
Goals – Swim Distances

• **Goal 4** – To competitively swim 50 metres freestyle by the end of 2022

• **Goal 5** – To competitively swim 50 metres backstroke by the end of 2022

• **Goal 6** – To be able to competitively swim 50 metres butterfly by the end of 2022
Goal 4 – To competitively swim **50 metres freestyle** by the end of 2022

-2 Training
-1 25 metres
0 50 metres
1 100 metres
2 800 metres

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Goal 5 – To competitively swim **50 metres backstroke** by the end of 2022

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Goal 6 – To be able to competitively swim **50 metres butterfly** by the end of 2022
<table>
<thead>
<tr>
<th></th>
<th>Importance</th>
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<th>Outcome ($X_1$)</th>
<th>$10\Sigma(W_1X_1)$</th>
<th>$\Sigma W_1^2$</th>
<th>$(\Sigma W_1)^2$</th>
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</thead>
<tbody>
<tr>
<td>Goal 4</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>Goal 5</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td>Goal 6</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>198</td>
<td>(24)$^2$ = 576</td>
</tr>
</tbody>
</table>

$$50 + \frac{10\Sigma(6 + 9 + 9)}{[(0.7)(36 + 81 + 81) + 0.3(24^2)]^{1/2}} = 50 + \frac{240}{[(0.7)(198) + 0.3(576)]^{1/2}} \approx 63.6$$
Goals – Swim Times

• **Goal 7** – To be able to competitively swim 50 metres freestyle in 41 seconds by the end of 2022

• **Goal 8** – To be able to competitively swim 50 metres backstroke in 56 seconds by the end of 2022

• **Goal 9** – To be able to competitively swim 50 metres butterfly in 56 seconds by the end of 2022

• **Goal 10** – To be able to competitively swim 100 metres freestyle in 1 minute and 36 seconds by the end of 2022
Goal 7 – To be able to competitively swim 50 metres freestyle in 41 seconds by the end of 2022

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Goal 8 – To be able to competitively swim 50 metres backstroke in 56 seconds by the end of 2022.
Goal 9 – To be able to competitively swim **50 metres** butterfly in **56 seconds** by the end of 2022

My best time **55.82 seconds**

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Goal 10 – To be able to competitively swim **100 metres** freestyle in **96 seconds** by the end of 2022

My best time **94.85 seconds**

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# Goal Attainment Scaling

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<th>Outcome ((X_1))</th>
<th>(10\Sigma(W_1X_1))</th>
<th>(\Sigma W_1^2)</th>
<th>((\Sigma W_1)^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 7</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>Goal 8</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td>Goal 9</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td>Goal 10</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>330</td>
<td>279</td>
<td>((33)^2 = 1089)</td>
</tr>
</tbody>
</table>

\[
50 + \frac{10\Sigma(6 + 9 + 9 + 9)}{[(0.7)(36 + 81 + 81 + 81) + 0.3(33^2)]^{\frac{1}{2}}} = 50 + \frac{330}{[(0.7)(279) + 0.3(1089)]^{\frac{1}{2}}} \approx 64.44
\]

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Goal 11: to compete in 2 events at the pool rescue championships by the end of 2022

<table>
<thead>
<tr>
<th>Training</th>
<th>1 event</th>
<th>2 events (Baseline)</th>
<th>3 events</th>
<th>4 events</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>+1</td>
<td>+2</td>
</tr>
</tbody>
</table>

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Goal 11: to compete in **2 events** at the **pool rescue championships** by the end of 2022

- **Training** -2
  - 100m obstacle

- 1 event -1
  - 100m obstacle
  - 100m manikin tow

- **2 events (Baseline)** 0
  - 100m obstacle
  - 100m manikin tow

- **3 events Attainment** +1
  - 100m obstacle
  - 100m manikin tow
  - 100m manikin carry

- **4 events** +2
  - 100m obstacle
  - 100m manikin tow
  - 100m manikin carry
  - 50m manikin carry

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## Goal Attainment Scaling

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<th>$(\Sigma W_1)^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 7</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>81</td>
<td>81</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90</td>
<td>81</td>
<td>(9)$^2$ = 81</td>
</tr>
</tbody>
</table>

\[
50 + \frac{10\Sigma(9)}{[0.7(81) + 0.3(9^2)]^2} = 50 + \frac{90}{[0.7(81) + 0.3(81)]^2} \approx 60.00
\]
Final Evaluation of Neurocognitive Training Program

• Overall comments in relation to Part One of the Neuro-Cognitive Training Program 2021 - 2022

• What’s next: Part Two of the Neuro-Cognitive Training Program 2023 – 2024 will address the following areas:
  • Agility
  • Endurance
  • Proprioception
  • Strength
Thank you

SEE THE PERSON
NOT THE DEMENTIA