Evidence Based Emmett

A demonstration of the evidence base of the Emmett Technique.

Presented by Greg Wills and Gemma Dustin

with assistance from Art Malak
Presentation Goal

This presentation will provide you with;

- An introduction to statistics
- Examples of ‘in-the-field’ data collection
- A visit to some remote parts of FNQ
Taking a closer look at our Emmett data
• Statistics is about looking for patterns of consistency that can be reproduced

• Statistics looks at the ‘group’ …
… to anticipate an outcome for the ‘individual’.
Statistical analysis of the data from our studies show that the Emmett Technique is not a therapy of luck and chance.

These studies provide consistent evidence of the effectiveness of the Emmett Technique.
Traditional Frequency Statistic

- Central Limit Theorem
- ‘Normal Distribution’ and ‘Bell Curve’
- Sample size
- Population size
This video is a demonstration of the ‘normal distribution’ curve.
The Bell Curve

SD = Standard Deviation
Example: Pain scale scores before and after an Emmett session.

There is no difference between Before and After scores
p-value = 0.99
The p-value is > 0.05, therefore the Before and After scores are not significantly different.
The p-value is < 0.05, therefore the Before and After scores are significantly different.
Statistical Significance

- The p-value is a measure of statistical probability.
- P-value < 0.05 has a 95% confidence value.
- Paired T-Test.

The analysis results were ALL less than 0.05. As you will see, they all have at least a p-value < 0.01.
HOW DID THIS ALL START?
Australian research sites

- ‘Degrees of Difference’ project (2015/16 - data from three locations)
- Cairns to Karumba Bike Ride 2016
- Cairns to Cooktown Cardiac Challenge 2016
- C2K - (Cairns to Karumba) - 2017
2015 Cardiac Challenge

A 3 day, 333 km bike ride!

Our team of Emmett Therapists
Rusty Allen, Gemma Dustin, Natalie Newman, Sharna Andrews and Amanda Mode
2015 Cardiac Challenge
2015 Cardiac Challenge
‘Degrees of Difference’ sites

Measuring the change in range of motion in 5 Emmett moves;

- Psoas / 12th rib
- Hamstring
- AC
- Biceps
- SCM

September 2015 - Cardiac Challenge - Cairns to Cooktown

November 2015 - Yungaburra fundraiser

February 2016 - Tim Donahue’s clinic
Hamstring Results

Individual results of ‘before’ and ‘after’ scores of Hamstring ranges.
The total number of before and after data points analysed from these three sources was **195** across the five moves.

### 'Degrees of Difference' Data

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of participants</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psoas / 12th Rib</td>
<td>37</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Hamstring - Left</td>
<td>33</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Hamstring - Right</td>
<td>34</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>AC - Left</td>
<td>14</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>AC - Right</td>
<td>14</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Biceps - Left</td>
<td>13</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Biceps - Right</td>
<td>17</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>SCM - Left</td>
<td>16</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>SCM - Right</td>
<td>17</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>
The largest data source was the Hamstring.
Below is a summary of analysis of the Left Leg Hamstring data.
<table>
<thead>
<tr>
<th>Maximum Increase in Range</th>
<th>Initial measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamstring - left leg</td>
<td>36°</td>
</tr>
</tbody>
</table>

Degrees of Difference sample
## Degrees of Difference sample

<table>
<thead>
<tr>
<th>Maximum Increase in Range</th>
<th>Initial measurement</th>
<th>After Emmett</th>
<th>Degrees of Difference</th>
<th>Percentage increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamstring - left leg</td>
<td>36°</td>
<td>91°</td>
<td>55°</td>
<td>153%</td>
</tr>
</tbody>
</table>

![Image of a person lying on a blue surface with a leg raised, showing a percentage increase in leg range.]
From Range of Movement to Pain Scale

- Self reporting Pain Scale
- Easier to administer
- 12 body locations
A 780km, 7 day bike ride across Cape York, held between 25th June - 1st July 2016.
Cairns to Karumba 2016
Cairns to Karumba 2016

Our team of Emmett Therapists

Rusty Allen, Gemma Dustin & Jane Yeates
Summary of data

170 data points

Cairns to Karumba Bike Ride - June 2016
Overall average changes in Pain Scale Scores

Before and After Pain Scale Score Means

p-value < 0.01
Cairns to Cooktown 2016

September 17-19, 2016.
3 day Cardiac Challenge bike ride.

Our team of Emmett Therapists

Back (L-R): Jayne Guthrie, Heather Graham, Gemma Dustin, Amanda Mode
Front (L-R): Rusty Allen, Jane Yeates, Megan McQuillan
Cairns to Cooktown 2016
Cairns to Cooktown 2016 - data

Summary of data

520 data points

Before and After Pain Scale Score Means

Before and After Pain Scale Score
- Paired Scores -

Data Summary - Average Before and After Scores

Pain scale score before Emmett session: 4.9
Pain scale score after Emmett session: 1.1

p-value < 0.01
List of Areas of Concern and Number of Emmett Sessions Performed
Cairns to Karumba - June/July 2016

- Neck: 30
- Shoulder: 25
- Knee: 18
- Thigh: 18
- Lower back: 17
- Ankle/Foot: 11
- Upper back: 9
- Hip: 8
- Lower leg: 8
- Wrist/Hand: 6
- Elbow: 4
- Hamstring: 3
- Forearm: 2
- Ischium: 2
- ITB: 2
- Calves: 1
- Feet: 1
- Headache: 1
- Lat dorsi: 1
- Lev scapula: 1
- Quads: 1
List of Areas of Concern and Number of Emmett Sessions Performed
Cairns to Cooktown - September 2016

- Shoulder: 119
- Neck: 104
- Thigh: 66
- Lower Back: 48
- Knee: 45
- Hip: 33
- Upper Back: 31
- Lower Leg: 23
- Ankle/Feet: 14
- Forearm: 12
- Wrist/Hand: 8
- Hamstring: 5
- Feet: 4
- Elbow: 3
- Ribs: 2
- Gluteal Cramp: 1
- Heels: 1
- ITB: 1

Number of Sessions vs. Treatment Areas
Top 5 Areas Treated

**Cairns to Karumba**

- Neck: 30
- Shoulder: 25
- Knee: 18
- Thigh: 18
- Lower back: 17

**Cairns to Cooktown**

- Shoulder: 119
- Neck: 104
- Thigh: 66
- Lower Back: 48
- Knee: 45

108 of 170 treatments = 64%

382 of 520 treatments = 73%
Cairns to Karumba - 2017

24th June - 30th June 2017
The 7 day, 780 km, bike ride across Cape York.

Our team of Emmett Therapists
Rusty Allen, Heather Clapham,
Megan McQuillan, Jane Yeates,
Fiona Phillips-Turner

106 Road Riders,
73 Dirt Riders,
24 support personnel,
64 volunteers
and 11 children.
A summary of 105 individuals receiving a total of 922 Emmett sessions across 15 body locations.

Statistically significant differences between ‘before’ and ‘after’ scores.

p-value < 0.001
On analysis, no statistical difference was found between old or new pain

p-value = 0.261
Pain Scale
Combined Data

Cairns to Karumba - 2016

Cairns to Cooktown - 2016

Cairns to Karumba - 2017

1,591 data points
Combined Data

Paired Scores - Before and After Emmett
(N = 1591)
Combined Data

Average ‘Before’ and ‘After’ Pain Scale Scores

N = 1,591
p-value <0.01
Comparing Data

However,

... there is more.

Effect Size - Cohen’s d

Cohen’s d uses a scale of:

- $d = 0.2$ small effect
- $d = 0.5$ medium effect
- $d = 0.8$ large effect

The ‘Before’ and ‘After’ results of the combined data from all three events (1,591 data points) achieved a Cohen’s d score of $2.08$.

Suggesting that (statistically) the likelihood of change after an Emmett session is very strong.
You all can be researchers

Plan what you want to measure and how

... gather data

... analyse it

... and share it.
Thank you