EDSGN 100

Concept Generation Project

Group Eight
Matthew Weis
Ryan Louder
Donald Brooks
People with CMT have difficulty using silverware

**Charcot-Marie-Tooth Disease:**
- Victims do not have normal control of their forearms and hands due to a nerve condition.
- Victims have great difficulty using conventional silverware to eat independently.

**Problem:**
- Design a means to assist a person with Charcot-Marie-Tooth (CMT) disease to use utensils to eat the food independently with convenience and at modest cost.

Source: Muscular Dystrophy Association (http://www.mda.org)
Easy to use silverware

**Customer Needs**
- Affordable
- Easy to use
- Versatile
- Durable
- Washable
- Ambidextrous
- Simple installation

**Objectives**
- Costs under $30
- Lasts 3-5 years minimum
- Takes up space of less than 6 in³
- Interchangeable parts
Concepts 1 & 2

Wraps around hand

Grips hand with clamp
Concepts 3 & 4

Velcro arm brace

Arm sleeve
Concept 5

Bypass nerves artificially
Artificial Nervous System (cont.)

The nervous system is made up of two main parts:

- The **central nervous system** (CNS) and the **peripheral nervous system** (PNS).

Someone with CMT does not have complete control over their peripheral nervous system but has control over their CNS.

- This concept would bypass the existing peripheral nerves through artificial “wiring” from the CNS.
- An artificial nervous system could receive more funding as it has the potential to be a cure for Charcot-Marie-Tooth disease.
## Selection Matrix

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
<th>1 wraps around hand</th>
<th>2 grips hand with clamp</th>
<th>3 velco arm band</th>
<th>4 arm sleeve</th>
<th>5 artificial nerves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rating</td>
<td>Weighted Score</td>
<td>Rating</td>
<td>Weighted Score</td>
<td>Rating</td>
</tr>
<tr>
<td>Cost</td>
<td>20%</td>
<td>5</td>
<td>1.0000</td>
<td>4</td>
<td>0.8000</td>
<td>4</td>
</tr>
<tr>
<td>Complexity</td>
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<td>4</td>
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<td>2</td>
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<tr>
<td>Washable</td>
<td>15%</td>
<td>5</td>
<td>0.7500</td>
<td>5</td>
<td>0.7500</td>
<td>5</td>
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<tr>
<td>Durability</td>
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<td>0.6000</td>
<td>3</td>
<td>0.4500</td>
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<tr>
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<tr>
<td>Safety</td>
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<td>1.0000</td>
<td>4</td>
<td>0.8000</td>
<td>5</td>
</tr>
</tbody>
</table>

| Total Score | 4.8500 | 4.1000 | 3.9000 | 4.8500 | 3.6000 |
| Rank        | 1      | 2      | 3      | 1      | 4      |
Wraps around hand

Grips hand with foam

Velcro arm band

Sleeve