Progress Report

Title: Active Ankle/Foot Orthotic (AFO) to Enhance Walking and Balance

Names: Jessica Hause: Co-leader  
Erin Main: Co-leader  
Emily Andrews: BSAC  
Josh White: Communicator  
Tony Schuler: BWIG

Date: April 13, 2007 - April 20, 2007

Problem Statement:
Create a device that actively enhances forefoot step-off and increases proprioception to improve balance for people experiencing ankle weakness, foot-drop and the inability to walk and balance safely as a result of various neurological diseases such as Charcot-Marie-Tooth disease, multiple sclerosis and stroke. The device should be non-obtrusive, fit in a shoe, comfortably attach to the leg, and be economical.

Last Week’s Goals:
- Mold the thermoplastic to our plaster mold
- Remove unnecessary areas of thermoplastic
- Attach the two pieces of our design together
- Add padding to the inside of the device
- Begin testing our orthotic

Summary of Accomplishments:
- Stripped off the casting and sanded down the rough areas of the plaster foot for molding
- Bought buckles, looked into fabrics for the inside of our orthotic and Velcro for straps
- Discussed various connecting mechanisms with Dr. Amyx
- Altered our final design connecting mechanism to a mechanism that is more feasible and durable
- Touched up our foot molding with plaster
- Molded thermoplastic to our foot molding
- Cut down the thermoplastic to fit our design
- Ordered carbon fiber

This Week’s Goals:
- Cut the thermoplastic into two pieces
- Drill holes in the two pieces and connect them with our bolts
- Add padding to the inside of our device
- Buy Velcro and attach it to our device
- Add carbon fiber to our device
- Begin testing

**Project Schedule:**

<table>
<thead>
<tr>
<th>Task</th>
<th>Jan</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Research</strong></td>
<td>26</td>
<td>2</td>
<td>9</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact Patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact Client</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meet with PT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brainstorming</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop Prototype</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Website**

**Deliverables**

<table>
<thead>
<tr>
<th>Mid-semester Presentation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-semester Report</td>
<td></td>
</tr>
<tr>
<td>Final Presentation</td>
<td></td>
</tr>
<tr>
<td>Final Report</td>
<td></td>
</tr>
<tr>
<td>Progress Reports</td>
<td></td>
</tr>
</tbody>
</table>

**Meetings**

| Semester Wrap-up            |       |

**Difficulties:**

This week our team had a fair amount of difficulty fabricating our original design. The thermo plastic used to mold orthotics does not adhere well to other materials and as a result, it would have been difficult for us to attach a buckle or strap to the pieces in order to connect them together. As a result, we decided on a more practical design involving two bolts that have to be removed with a screw driver in order to get the two pieces apart. The device is still detachable, but is slightly more difficult than originally planned.

**This Week’s Activities:**

4/13/2007 Josh: Sanded orthotic                  2 hours
4/13/2007 Erin: Sanded orthotic, shopped for parts, molded thermoplastic 7 hours
4/13/2007 Jess: Sanded orthotic, shopped for parts, molded thermoplastic 7 hours
4/13/2007 Emily: Sanded orthotic, shopped for parts, molded Thermoplastic 6 hours
4/13/2007 Tony: Sanded orthotic, shopped for parts, molded thermoplastic 5 hours
4/18/2007 Jess: Progress report                  1 hour
Overall Total Hours:

Individual

Erin: 69 hours  
Jess: 66 hours  
Josh: 58 hours  
Tony: 61 hours  
Emily: 62 hours

Team Total 317 hours

Week Total 28 hours