Measuring Exercise Systolic BP in Kids

Client: Dr. Allen Wilson
Adviser: Paul Thompson
Team: Madison mlboston@wisc.edu (Team Leader)
       Haley hknapp2@wisc.edu (BSAC)
       Katie kbarlow@wisc.edu (BWIG)
       Michal adamski2@wisc.edu (Communicator)
       Lizzie lkrasteva@wisc.edu (BPAG)

Problem Statement
A simple auscultory-cuff method is currently used to measure BP during treadmill stress testing in adults and kids. In younger kids, 6-12 yr old, however, it is often difficult to hear the peak systolic sound that defines systolic pressure. Sampling from 1st finger or thumb with probes at rest give accurate pulsed signal that can be used with BP cuff to find peak systolic BP equivalent. The problem is that laser Doppler signals are motion sensitive. Luckily, when we do exercise BPs with kids on treadmill, we hold the arm up off the treadmill. A stabilizing glove/device that holds a probe in place on 1st finger or thumb pulp, while stabilizing the finger or thumb from movement that causes artifact on the signal is needed.

Summary of Team Role Accomplishments
- Leader Madison - Completed Progress Report, Pulse-Wave Velocity Research
- Communicator Michal - Pulse-Wave Velocity Research
- BWIG Katie - Pulse-Wave Velocity Research
- BSAC Haley - Pulse-Wave Velocity Research
- BPAG Lizzie - Pulse-Wave Velocity Research

Summary of Design Accomplishments
- Team read the Pulse-Wave Velocity articles given by Dr. Wilson to learn more about the new direction of the project.
- Team met with Dr. Wilson on Thursday, February 11th, to discuss how pulse wave velocity testing would be incorporated with cardiovascular disease detection. The following conclusions/action items were made:
  - Our project will involve measuring pulse-wave velocity before and after exercise to determine important diagnostic information in adults and children with hypertension.
  - The design of our project/protocol will test pulse-wave velocity readings at different locations on the arm (distal and proximal).
  - EKG will be used if necessary, but is not a priority at this point.

This Week’s Goals/Individual Goals
- Test and familiarize ourselves with the new equipment from Dr. Wilson.
- Identify distal and proximal areas on the arm for where pulse-wave velocity recordings should be taken.
- Email questions/concerns to Dr. Wilson this week.
<table>
<thead>
<tr>
<th>Date</th>
<th>Person(s)</th>
<th>Task</th>
<th>Time(hrs)</th>
<th>Weekly Total</th>
<th>Semester Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/4-2/11</td>
<td>Madison</td>
<td>Pulse-Wave Velocity Research</td>
<td>2.5</td>
<td>2.5</td>
<td>4.0</td>
</tr>
<tr>
<td>2/4-2/11</td>
<td>Haley</td>
<td>Pulse-Wave Velocity Research</td>
<td>3.0</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>2/4-2/11</td>
<td>Michal</td>
<td>Pulse-Wave Velocity Research</td>
<td>1.75</td>
<td>1.75</td>
<td>3.25</td>
</tr>
<tr>
<td>2/4-2/11</td>
<td>Katie</td>
<td>Pulse-Wave Velocity Research</td>
<td>1.5</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>2/4-2/11</td>
<td>Lizzie</td>
<td>Reading Pulse Wave Velocity Papers</td>
<td>1.5</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>2/4-2/11</td>
<td>Team</td>
<td>Client meeting</td>
<td>1.0</td>
<td>1.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>