

Sleep Lab Monitor - Progress Report 2

1/31/09-2/6/09

Project Title:

A combined Thermistor, Pressure, and CO₂ device for use in the Sleep Laboratory

Team Members:

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Problem Statement:

There are three measurements taken from each breath during polysomnography. The following devices are used: a thermistor to detect temperature difference between inhaled and exhaled air, pressure sensors that show a flattening pressure profile during upper airway narrowing, and CO₂ sampling tubes to sense End Tidal CO₂. These three measurements are taken from two different devices placed under the child's nose, with two prongs going into each nostril. This method can be inaccurate if a nostril was to become obstructed, and each device may not sample from both nostrils as well as the mouth. Moreover, the current apparatus may be uncomfortable for the child as well as insecure on the child's face. This could cause a disruption of sleep and a possibility of the devices becoming unfastened during the night. To solve these problems, the goal is to design and develop a prototype that combines these three measuring devices into one apparatus that samples from both of the nostrils as well as the mouth, and attaches to the child in both a durable and comfortable fashion.

Reinstatement of Team Goals from Last Week:

1. Set up Prototype testing in the Sleep lab
2. Continue to do background research
3. Have a team meeting to discuss modification alternatives for prototype

Summary of Team Accomplishments:

1. E-mailed lab technicians to set up prototype testing in sleep lab
 - a. Current contact technician is on vacation right now
2. Background research
 - a. Called Grass company about ordering connectors
 - i. They are not sold separately, but we have a few contacts to order the connectors from
3. Scheduled a team meeting on Sunday, Feb. 8
 - a. We will test our current prototype on a portable laptop with a National Instruments data acquisition device that Jason has
 - b. The two grass lead connectors we have will be soldered to the current prototype
 - c. Continuing to brainstorm modification ideas

Statement of Team Goals for Upcoming Week:

1. Prepare our testing procedure for our current prototype
2. Set the date for our prototype testing
3. Have team meeting to solder connectors on and test our prototype with portable data acquisition device
4. Continue background research

Project Schedule

1/23/09-1/30/09: First client meeting, background research for modifying current prototype
1/31/09 – 2/6/09: Perform background research
2/7/09 – 2/13/09: Background research, modification alternatives
2/14/09 – 2/20/09: Continue to brainstorm for modification ideas, test current prototype
2/21/09 – 2/27/09: Work on design and choose design modification alternatives
2/28/09 – 3/6/09: Complete Mid Semester Presentations
3/7/09 – 3/27/09: Develop modifications and build new prototype
3/28/09 – 4/24/09: Test modified prototype
4/25/09 – 5/1/09: Complete and give Final Presentation, submit notebooks and paper

Team Difficulties:

Lab technician is on vacation, so we have to wait to schedule our prototype testing.

Expenses:

None

Activities and Individual Accomplishments:

Nicole – 2: Called Grass company, e-mailed lab technicians to set up prototype testing

Jason – 2: Background research, acquiring portable data acquisition device

Lindsey – 2 hours: Background research

Robyn – 2 hours: Background Research

Total hours for this week: 8

Cumulative hours to date: 22

Sleep Lab Monitor Gantt Chart Spring 2009												Completed:			
												In Progress/Planned:			
	1/23	1/30	2/6	2/13	2/20	2/27	3/6	3/13	3/20	3/27	4/3	4/10	4/17	4/24	5/1
Background research	Completed	In Progress	In Progress	In Progress											
Test Current Prototype				In Progress	In Progress										
Client Meetings	Completed		In Progress		In Progress	In Progress				In Progress			In Progress		
Meetings with Professors/Tech															
Brainstorm design		In Progress	In Progress	In Progress											
Design Modification alternatives/mat				In Progress	In Progress										
Midsemester presentation					In Progress	In Progress	In Progress								
Finalize design ideas							In Progress								
Ordering materials							In Progress	In Progress	In Progress						
Construct modified prototype								In Progress	In Progress	In Progress					
Test modified prototype & Materials									In Progress	In Progress	In Progress	In Progress			
Plan final poster presentation													In Progress	In Progress	
Write final paper												In Progress	In Progress	In Progress	
Final advisor meeting															In Progress

