

Sleep Lab Monitor - Progress Report 4

2/14/09-2/20/09

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. Finalize date and time for lab visit with Linda
2. Solder thermistor connectors onto prototype
3. Receive sample connectors and test with existing equipment
1. Write more detailed testing procedures to use at sleep lab

Summary of Team Accomplishments:

1. Linda finally confirm our sleep lab visit
 - a. We will be going to the sleep lab on Wednesday, February 25th at 2:00p
2. Before we could solder connectors on we had to play around with the labVIEW/labjack set up
 - a. Jason did worked on the labview program and circuit to get the best signal from the thermistors
3. Started writing a more detailed testing procedures document
 - a. We plan to test our thermistor and the current one they have
 - b. We might look into starting to test the dilution problem as well
4. The tiny bare bead thermistor company responded
 - a. They want to know the size and quantity of thermistors we'd like to try and they will send us a quote

Statement of Team Goals for Upcoming Week:

1. Solder connectors on once we get the samples in the mail
2. Finish writing up our testing procedure
3. Attend sleep lab visit
4. Start working on our mid-semester presentation
5. Plan our out-of-lab testing procedures

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:

Client cannot attend sleep lab visit date and time.

Expenses:

None

Activities and Individual Accomplishments:

Nicole – 3: Wrote primary outline of testing procedures

Jason – 3.5: Submitted ideas for testing procedure, did some independent work on our labVIEW program and circuit.

Lindsey – 3 hours: Submitted ideas for testing procedures, contacted the Tharkson's company about the bare bead thermistors

Robyn – 3 hours: Contacted Plastics1 about connectors, background research

Total hours for this week: 15.5

Cumulative hours to date: 52.5

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	Completed	Completed	Completed											
Test Current Prototype					In Progress										
Client Meetings	Completed		Completed		In Progress	In Progress				In Progress			In Progress		
Meetings with Professors/Tech															
Brainstorm design		Completed	Completed	Completed											
Design Modification alternatives/mat				Completed	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

