

Sleep Lab Monitor - Progress Report 7

3/7/09-3/13/09

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. Each member will search and contact a company that sells thermistors for medical applications
2. Complete notebooks
3. Try out the free EDF-to-ASCII converter software

Summary of Team Accomplishments:

1. Nicole contacted GE Healthcare about some medical application thermistors
 - a. The thermistors were more in our range of temperatures
 - b. The time constants were too long
2. Received a list of pediatric sleep labs in the US we should contact
 - a. Each member thought of ideas to build a survey to access the demand for our product
 - b. Each member is in charge of 2-3 sleep labs to contact
3. Searched for medical application thermistors
 - a. Lindsey e-mailed Tharkson's again to receive more detail on the range of temperatures for their thermistors
4. We found a EDF-to-ASCII converter software
 - a. Need to try it with the software at the sleep lab before we export the file to excel

Statement of Team Goals for Upcoming Week:

1. Put together the survey to send to pediatric sleep labs
2. Each member will contact 2-3 sleep labs with survey
3. Continue to research for medical application thermistors with smaller time constants

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:

Finding a cheaper, faster response thermistor in the correct temperature range.

Expenses:

None

Activities and Individual Accomplishments:

Nicole – 4: Contacted GE about their medical application thermistors, finished notebook, continuing to research for thermistors

Jason – 3: finished notebook, research for thermistors

Lindsey – 3 hours: finished notebook, research for thermistors, e-mailed Tharksons again about getting a quote/specs from their thermistors

Robyn – 3 hours: Finished notebook, research for thermistors

Total hours for this week: 13

Cumulative hours to date: 116.5

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					Completed										
Client Meetings	Completed		Completed		Completed	Completed				In Progress			In Progress		
Meetings with Professors/Tech															
Brainstorm design		Completed	Completed	Completed											
Design Modification alternatives/mat				Completed	Completed										
Midsemester presentation					Completed	Completed	Completed								
Finalize design ideas							Completed								
Ordering materials							Completed	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

