

# PELVIC FLOOR BIOFEEDBACK DESIGN

**Client:** Dr. Patrick McKenna, UW Urology Department

**Advisor:** Dr. Amit Nimunkar

**Team:** Sam Lines (Leader)

Michael Simonson (Communicator)

Shawn Patel (BWIG)

Andrew Vamos (BSAC&BPAG)

**Date:** 9/14/2014-9/19/2014

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## Problem Statement

Pelvic floor muscle biofeedback systems have been used to educate and train people how to correctly control the process of urination in children and elderly patients. As devices slowly fail or get outdated, a new device and interface system that can be used in conjunction with videogame like training programs is desired. With the completion of a basic EMG biofeedback system, our goal is to continue to improve the functionality of the software while simultaneously designing hardware with commercial standards in mind. This product will be designed and tested so that use in a hospital will be safe for both the hospital staff and the patients.

## Last Week's Goals

- Finish the current EMG design on a bread board in the lab so that we can begin comparing our EMG to industry standards.
- Begin research on industry standards for EMGs.
- Decide if we want to use an Arduino or if we want to code our own microcontroller.

## Summary of Team Role Accomplishments

- Leader (Sam): Worked with Shawn to begin research into the frequency response and gain of EMG's geared toward the pelvic floor muscles
- Communicator (Michael): Met with Andrew to begin finalizing the decision on microcontroller
- BWIG (Shawn): Worked with Shawn to begin research into the frequency response and gain of EMG's geared toward the pelvic floor muscles
- BPAG And BSAC(Andrew): Met with Andrew to begin finalizing the decision on microcontroller

## Summary of Design Accomplishments

- With Amit's help, research of filter design for pelvic floor EMG has started.
- The team has started the decision making process for the power supply.
- In our team meeting we decided on a much more detailed schedule for the semester.

## Project Difficulties

- Research into the characteristics of a pelvic floor EMG has shown us that we need to continue to improve the circuitry of our current design
- With such a short semester, each different part of the project is going to have to be done faster than we anticipated at the beginning of the semester.
- There is a lot of testing that needs to occur to ensure the safety and reliability of our final product. However for that to occur we need to finalize our hardware design parameters.

## This Week's Goals

- Since processing will have to occur on the microcontroller, research into different microcontrollers will have to continue to determine the best one for our application.
- Finish research on the filters needed for a pelvic floor EMGs
- Use BME 462 webpage to learn about driven right leg so that we can power our EMG with single power supply
- Further refine the team's goal, and improve the recording of team activities

## Activities

Person(s)	Task	Time (hrs)	Week Total	Semester Total
Sam	Team meeting	1	2	5
	Research	1		
Michael	Team meeting	1	2	5
	Research	1		
Shawn	Team meeting	1	2	4
	Research	1		
Andrew	Team meeting	1	2	4
	Research	1		

## Timetable

- Due to the large size of our timeline, I will attach the full excel spreadsheet

## Expenses

- No current expenses