

## **Development of an ultrasound probe holder for arterial function testing (Probe Holder)**

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**Team:** Leon Corbeille (BWIG)

Neal Haas (Communicator)

Peter Kleinschmidt (Leader)

Lein Ma (BSAC)

### **Progress Report for Week 7: March 6 – March 12**

#### **Problem Statement:**

To aid in the ultrasonography of arterial reactivity, a simple, stable, adjustable probe holder is needed. The stabilization provided by such a holder could potentially improve probe imaging quality and diagnostic effectiveness. The device should be able to be finely adjusted with 6 degrees of freedom, and free the hands of the technician for the duration of the study.

#### **Last Week's Goals:**

- Finalize design concepts and dimensions
- Continue selecting and ordering raw materials for construction

#### **Summary of Accomplishments**

- Identified several options for clamps to purchase.
  - The outer diameter of the clamps does not meet the specifications of the arm however, and therefore will either require machining or we will need to find a different option.
- Reassessed financial aspects of current arm system. The arm was ordered without a magnetic base. It has been decided that a magnetic mounting system will allow for the most versatility of the device. It is more economic to return the current arm and order a new one including the magnetic clamping mechanism than to purchase the magnet separate.
- Going forward with the magnetic clamping idea, it was decided that we will look to have a solid board either of a plastic or wood composite with a metal surface attached to it.
  - The most cost effective option will be identified.
- Investigated one more time the feasibility of the goose-neck concept with new information provided by Professor Fronczak. A local supplier was found making implementation easier, however as identified in the mid-semester presentation, this option still does not seem to offer as much stability or control.
- Refined concept for arm cradle and began identifying materials.

#### **This Week's Goals**

- Finalize all materials needed for construction of the first generation prototype.
  - Includes: Clamp, Base, Metal Surface, Arm Cradle, All fasteners and attachments, Foam for arm cradle
- We would like to have all or most of these materials ordered or purchased within the next week to begin construction in April.
- Complete shop certifications

**Project Difficulties:**

No major difficulties beyond issues mentioned above in the accomplishments

**Team Activities**

Members	Activity	Time Spent	Total
Team	(No cumulative team work. Small group work outlined individually)		20.00 hr.
Lein	Supplies Research	1.00 hr	11.00 hr.
Leon	Supplies Research	4.00 hr	12.00 hr.
Peter	Progress Report, Goose-Neck Investigation, Clamp Research	1.50 hr	11.50 hr.
Neal	Supplies Research	1.00 hr	9.75 hr.

**Project Timeline**

Task	Jan.		February				March				April				May	
	23	30	6	13	20	27	6	13	20	27	3	10	17	24	1	8
<b>Project Development</b>																
Brainstorm/Design Development																
Finalize Design																
Prototyping																
<b>Deliverables</b>																
Progress Reports																
Mid-semester Paper																
Mid-semester Presentation																
Final Paper																
Final Poster																
<b>Meetings</b>																
Client																
Advisor																
<b>Website</b>																

**Budget/Expenses**

Pending information.