Results/Data

- As a result of pool testing conducted last semester, a revised protocol was created at the beginning of this semester to more strongly indicate the presence or absence of a complete cognitive spatial map.
- Results were very consistent over all participants using the revised protocol.
- The new protocol not only showed greatly improved consistency; the range of the number of required laps were greatly reduced.

Qualitative Results

From participant exit interviews:

- The vibrating device was helpful in allowing participants to identify when they were in corners.
- Participants also report using step counting, sound cues, and depth of the water to assist them in orienting themselves.
- Specific locations required thought but the device made pool boundaries very

Next Steps

- Collect and store all IPRO testing materials.
- Comprehensively archive Team Buoy information.

Team Structure

Communication

Michaela Healton
Claude Antony
Kim Dykeman
Michael Schafer
Joseph Taylor

Technology

Aubrey Chipman
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A special thanks to:

ILLINOIS INSTITUTE OF TECHNOLOGY

The Chicago Lighthouse
for People Who are Blind or Visually Impaired

Communication

IPRO 310

Buoy

A Vision

for

Blind Swimmers

Statistics

- 1.8 million people with blind condition in the US (US Census)
- 7.8 million people with blind and visually impaired (BVI) condition in the US (US Census)
- Up to 80% abandonment rate of assistive technology (Michigan Dept of Education)

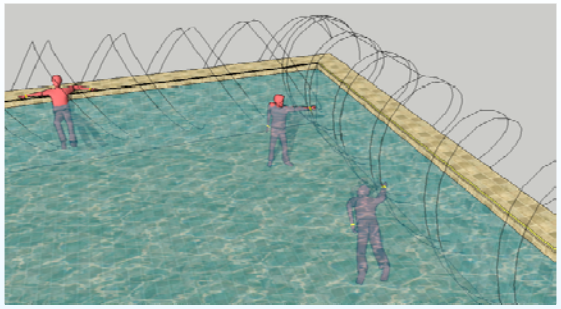
Mission Statement

"Our mission is to develop, test, and implement an assistive technology in collaboration with the blind and visually impaired (BVI) community that promotes safety and improves independence of BVI individuals while swimming."

Goals

- Since lack of assistance leads to a sedentary lifestyle, create an assistive technology that allows BVI individuals to, along with the rest of the nation, seek a more active lifestyle safely
- Revise the method of communicating available information between the device and the swimmer for better safety and stronger mental map
- Include the BVI community in the design process using surveys, interviews, and BVI facility visits

Research



- Mobility Training (current methods for cane training, dog training, etc.)
- Spatial Mapping (creating a model,)
- Communication Methods (tactile feedback, audio feedback, verbal feedback)

Testing

- Subjects: 5
- Gender: 4 male, 1 female
- Age Range: 19-21
- Testing was performed in Keating Pool and in the basement of the Herman Hall

Methodology

The Communication team developed a protocol using research , subject matter experts, and the results of testing conducted on a pilot protocol last semester.

The training protocol that was developed:

1. The subject enters the pool.
2. Subject walks two laps around the pool with assistance.
3. Subject is asked if they feel they have created a strong enough mental map to proceed with testing.
   A.) If a mental map has been formed, proceed to step 4.
   B.) If a mental map has not been formed, subject does another assisted lap.
4. Test Phase #1
   A.) If pass, subject proceeds to step 5.
   B.) IF fail, subject does another assisted lap.
5. Subject is allowed to walk freely within the test perimeter for 5 minutes.
6. Test Phase #2.
   A.) If pass, subject proceeds to step 7.
   B.) If fail, subject does another assisted lap.
7. Subject completes steps 2 through 6 again swimming instead of walking.

This new protocol was tested with five volunteers from the Illinois Institute of Technology. This provided the Communication team with results. These results led us to believe that the protocol we have created allows subjects to have a strong mental map after approximately one hour of training.