IPRO 310

Designing and Building Prototypes for Assisting Blind and Visually Impaired Swimmers

PASSIVE TEAM

Our Mission

"Provide a safe, effective, and reliable assistive device for visually impaired swimmers"

PROBLEM

- According to the American Federation for the Blind, there are 10 million BVI Americans.
- The durability of the end tappers was insufficient because they degraded with exposure to chlorine from the pool
- The durability of the side tappers was insufficient because they were damaged from rolling them around the old storage device.

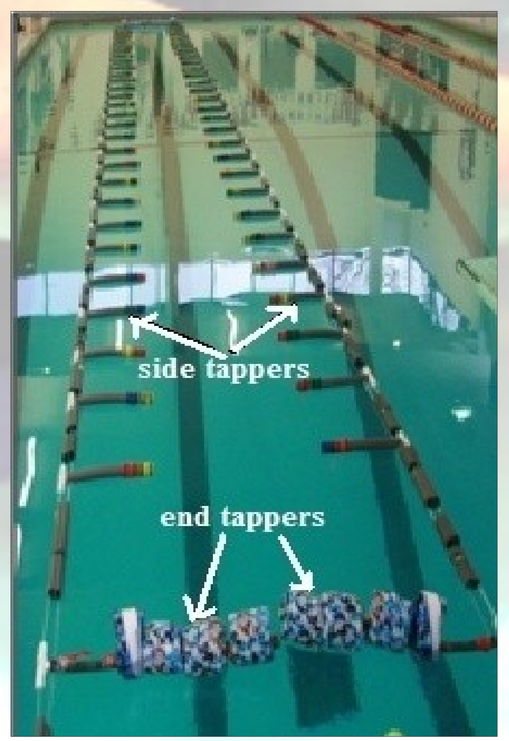
GOALS

- Rebuild the passive device and redesign the end tappers.
- Redesign the storage device.

POOL TEST

End Tappers: The team tested the modified end tappers that were re-designed by incorporating an arm flotation device.

Storage Device: The team also modified the previous version of the storage device by rotating it vertically to minimize the bending of side tappers and reduce the overall wear and tear of the device.



RESULTS

Survey results from BVI swimmers:
(1) reduce the number of side tappers and
(2) widen the lane lines.

"If you lessen the distance between tappers, it would make a great device." - Kelly, blind swimmer

"I loved the device and had lots of fun." - Alex, partially blind swimmer

"Confident in the pool setup. Need to narrow end tappers." - Beth, blind swimmer

ACKNOWLEDGEMENTS

Chicago Lighthouse for the Blind

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ACTIVE TEAM

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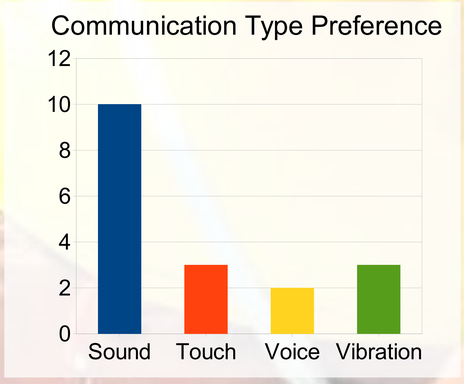
BACKGROUND

- Previous groups developed a vibrating belt and a snorkel device to communicate with BVI swimmers.
- These past devices inhibited or had little affect on the BVI swimmer or their performance.

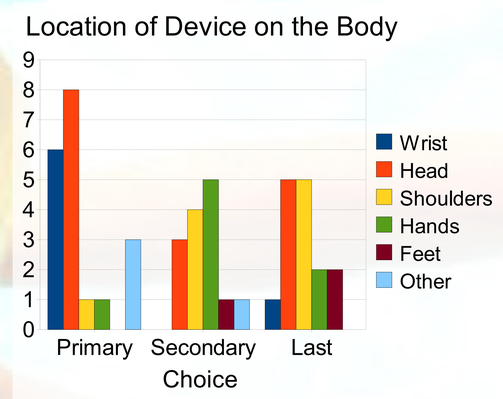
OBJECTIVE

- Incorporate human factors into the decision-making process
- Increase knowledge of current technologies and their applicability to this project
- Improve previous device.
- Test hydrophone, technology

SURVEY RESULTS



Visually impaired individuals were asked how they would like to receive information.



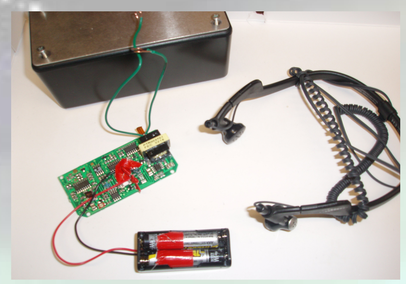
Visually impaired individuals were asked where on the body they would prefer an assistive device.

TESTIMONIALS

"I really like using devices that 'talk back' to me."

"If I had a device, I would like it to be about the size of a cell phone or watch."

Hydrophone device



Converting snorkel to a more hydrodynamic device using headphones concept

"I've used stuff that talks, like watches and computers, and they're really helpful."

METHODOLOGY

The team:

- Developed and administered a survey to the BVI population
- Researched several existing technologies
- Tested a new technology and modified a device from previous semester

CONCLUSIONS

The team found that visually impaired persons prefer a device that does not stand out.

- Audio device
- Worn on the head

FUTURE

Future IPRO teams should use the survey results in the decision-making process for future designs and build on information learned from new and existing technologies