

An apparatus for the monitoring of weight distribution for balance rehabilitation of post stroke patients

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Due to a stroke a number of years ago, a hemiplegic individual cannot feel the left side of her body. She is ambulatory but due to lack of left-side sensory feedback, she cannot sense if she is standing straight or leaning to one side or the other. She wants a way to practice distributing her weight equally on both feet. She is unable to look down at her feet without losing her balance.

We are working on a device that will monitor her stance and provide feedback to guide it. This will allow her to practice standing straight. Our device will be compact and portable enough to travel with her if she travels.

Client requirements

- Portable
 - Foldable/ Able to be rolled up
 - Battery powered (AA)
 - AC adapter
 - Low weight
- Quick Visual Feedback
- Thin
- Easy to Store
- No-slip Surfaces
- One-handed Carrying
- Simple User Interface
- Durable
- Beveled Edges
- Able to accommodate a shoulder width stance

Design requirements

- 1) Physical and operational characteristics
 - a. Performance requirements
 - i. Used briefly throughout the day
 - ii. Used while multi-tasking
 - b. Safety
 - i. Waterproofing
 - c. Life in Service
 - i. TBD
 - d. Shelf life
 - i. Batteries vs. AC

1. Possible waterproofing issues. (boat friendly)
 - e. Operating Environment
 - i. On a boat
 - ii. Indoor/outdoor
 - f. Ergonomics
 - i. Must support a person
 - g. Size
 - i. Restrictions on size
 1. Notebook sized
 2. Under 1" high (unfolded)
 - ii. Portability
 1. Portable as possible
 - iii. Space available
 1. Compact as possible
 - iv. Access for maintenance
 1. Battery access
 - h. Weight
 - i. ~3 lbs. total
 - i. Appearance
 - i. Steampunk i.e. awesome!
- 2) Production Characteristics
- a. Quantity
 - i. 1
 - b. Target Product Cost
 - i. "Money is no object"
- 3) Miscellaneous
- a. Competition
 - i. Many similar P.T. devices exist. But are unspecialized to our client's needs.