ACCESSIBLE WEIGHT SCALE FOR SEATED USERS

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Overview

- Background Information
- Currently Available Products
  - Accessible Weight Scale for Seated Users
    - Elevated Toilet Compartment
    - Posture Support
    - Handheld Console
    - Operation Procedure
- Budget
- Conclusion
- Q & A
Background Information

- Theoretical clients have:
  - Limited mobility
  - Limited hand and arm strength
  - Poor eyesight and memory

- Currently Available Products
  - Bulky
  - Expensive
  - Require Assistance
    - Visual Outputs only
    - Display not visible to user
  - Cannot store readings

Detecto Model 6876 Euro Chair Scale w/ Flip-Seat
Accessible Weight Scale for Seated Users

- Integrated into an elevated toilet seat
- Store previous readings
- Take a reading in under 10 seconds
- Total capacity: 500+ pounds
- Accuracy: 1/5 pound
- Display outputs and prompts visually and audibly
- Simple user interface
Accessible Weight Scale for Seated Users

- Main components
  - Elevated toilet compartment
  - Toilet seat
  - Handles
  - Adjustable/removable foot support
  - Handheld console
Elevated Toilet Compartment

- Elevates toilet seat 5”
- Made of 2 aluminum alloy plates and solid aluminum rods
- Supports foot support channels
- Houses electrical components
- Communicates wirelessly w/Handheld console using Bluetooth
- Easily accessible battery access panel
Elevated Toilet Compartment

- Exchanged 350a beam load cells for SMD S290
- Capacity 300kg/660lbs
- 3 Load cells held by mounting mechanism
- Output signals filtered and amplified
- A/D conversion used
Posture Support

Monroe: Pull Handles
Material: Fiberglass
Reinforced
Technopolymer
Handheld Console

- Acts as user interface
- Outputs and prompts given by LCD and text to speech module
- eb505 bluetooth module and USART used to communicate
- Uses one 9V battery
Normal Mode

- Turns on automatically
- Takes measurement automatically
- User decides to save data
  - If data is not stored it is saved in character array not memory bank
- Turns off automatically
Setup Mode

- Entered by pressing ‘setup’ button
- Can view previous readings
- Can export data to nearby computer
- Can tare scale for greater accuracy
Future Generations

- Focused on clinical setting
- Weight scale will allow for multiple users
- Smaller height of elevated compartment for users with handicap accessible toilets
- Bluetooth would still be used to limit interference
Conclusion

- Many people in need of accessible weight scale
  - Obesity and old age lead to increased number of wheelchair bound
  - Diabetes leading cause of amputation
- Current products inconvenient
  - Bulky
  - Expensive
  - Additional assistance required
- Our device allows for more independence
  - Easy to use
  - Stores previous readings
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Questions and Answers