Rehabilitation Engineering: Design of a Shower Transfer Seat

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Universal Shower Transfer Seat
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Background & Client

- **Rehabilitation Engineering**
  - Design, develop, adapt, test, evaluate, and apply technological solutions to problems confronted by individuals with disabilities [1]
- **Universal Design**
  - Orient the project around the observation that human beings occur within range of abilities [2]
    - Equitable use
    - Flexibility in use
    - Simple and intuitive
    - Perceptible information
    - Tolerance of error
    - Low physical effort
    - Size and space
- **Client**
  - Kettering Health Network Innovation Center
  - NeuroRehab & Balance Center

Research

- **Problem Statement**
  - “Design a new bath transfer seat to overcome many of the problems of commercially available seats. Following the principles of universal design in the conceptualization is requested to ensure that the design maximizes the population who can effectively use the new seat.”
- **Research**
  - Amazon Reviews: difficult leg adjustment, uncomfortable seat, instability
  - Patient populations
  - Client meetings
  - User interviews
  - ADA guidelines

Design Specifications

- **Requirements**
  - Includes adjustable pericare door
  - Height adjustable for different bathtubs
  - Corrosion resistant
  - Mildew/mold resistant
  - Accommodate right and left shower heads
  - Doesn’t collect water
  - Include backrest
  - Support 350 lbs
  - Weigh less than 10 lbs
  - Cost user <$150
  - Water doesn’t leak out of shower
  - Contrasting colors

<table>
<thead>
<tr>
<th>Primary Criteria</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Safe</td>
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<tr>
<td>Adjustable</td>
<td>10</td>
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<tr>
<td>Compatible with curtain</td>
<td>10</td>
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<tr>
<td>Durable</td>
<td>9</td>
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<tr>
<td>Low effort</td>
<td>9</td>
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<tr>
<td>Easy to remove</td>
<td>8</td>
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<tr>
<td>Comfortable</td>
<td>8</td>
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<td>Intuitive</td>
<td>8</td>
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<tr>
<td>Space Efficient</td>
<td>8</td>
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<tr>
<td>Accessories in reach</td>
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<tr>
<td>Easy to clean</td>
<td>7</td>
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References & Funding


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Next Steps

- Prototyping
- User testing