Influence of Object Characteristics on Patient Safety and Stability During Ambulation

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Background
- 700,000 - 1,000,000 patient falls occur in U.S. hospitals each year, 33% result in injury1.
- Current Fall prevention strategies are limited; bed alarms, monitoring, education to raise awareness, exercise and balance training1.
- Research that exists related to fall risk and room design focuses on individual factors such as flooring and lighting2,3, missing the complex interactions between the patient and environment.

71 healthcare professionals working with mobility impaired individuals were surveyed to investigate object characteristics and their influence on patient safety and stability during ambulation in a hospital room.

Respondents
- What is your profession?
  - 46% Physical Therapist
  - 20% Nurse
  - 14% Physican
  - 9% Occupational Therapist
  - 11% Other Profession
- How often do you observe or assist with patient mobility?
  - 43% Always
  - 27% Often
  - 27% Sometimes
  - 3% Rarely
- Which tasks do you typically observe or assist with?
  - 96% Walking
  - 87% Transfers
  - 83% Turning
  - 69% Sitting
  - 41% Toileting

The Survey
Rate the level of influence (1-Low to 5-High) that each object characteristic (shown below) has on a frail patients safety and stability during each presented scenario.

Results: Walking & Turning
- No significant difference in ratings between reactively and proactively using objects for support
- No significant difference in ratings between walking and turning
- Height, Movability, Grasp-ability are equally influential
- Type of grasp > smoothness of grasp, p < .001
- Resistance to movement > compliance of surface, p < .001

Results: Sit-Stand-Sit
- Movability & Height > Grasp-ability, p < .001
- Seat pan > armrest > backrest height, p < .001
- Type of grasp > smoothness of grasp, p < 0.01
- Resistance to movement > compliance of surface, p < .001

Significance & Future Research
- Walking and turning tasks require similar object characteristics for patient safety and stability.
- The most influential characteristics in walking and turning are: height, resistance to movement, and type of grasp
- Future research will aim to quantify the influence object characteristics have on stability.

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References