

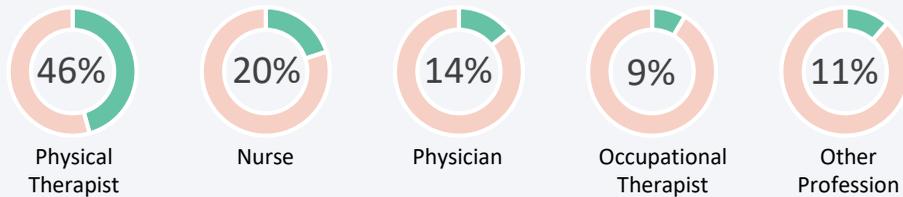
Background

- 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 lighting^{2,3}, missing the complex interactions between the patient and environment.

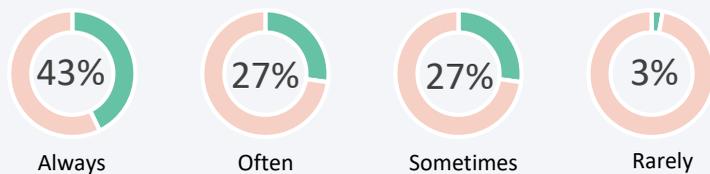
71 healthcare professionals working with mobility impaired individuals were surveyed to investigate object characteristics and their influence on patient safety and stability during ambulation in a hospital room

Respondents

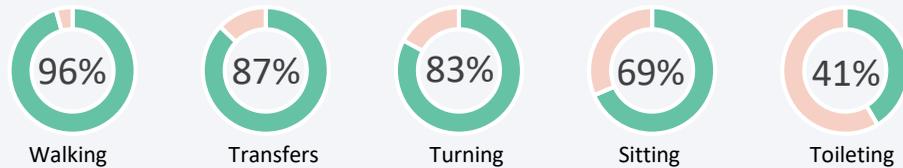
- What is your profession?



- How often do you observe or assist with patient mobility?



- Which tasks do you typically observe or assist with?



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.

Height

- Seat pan
- Armrest
- Backrest

Movability

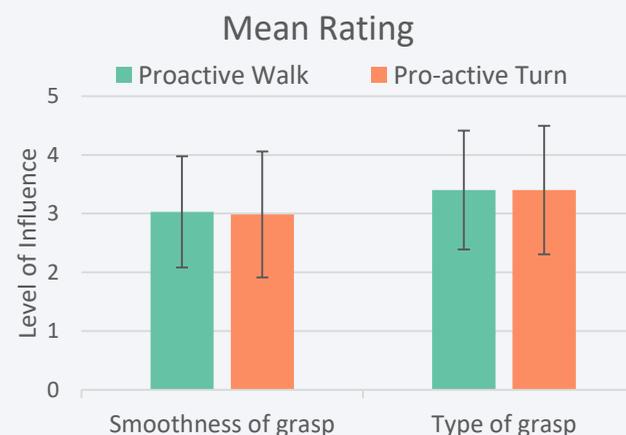
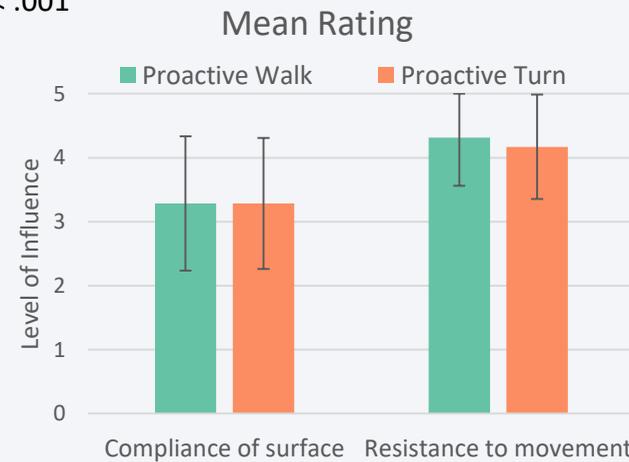
- Resistance to movement
- Compliance of surface

Grasp-ability

- Type of grasp
- Smoothness of grasp (Friction)

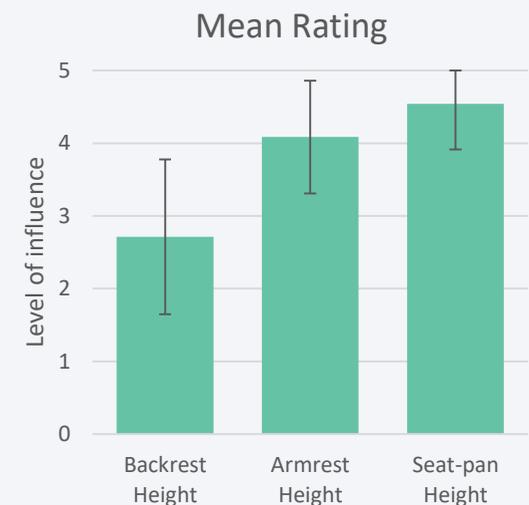
Results: Walking & Turning

- 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, $p < 0.001$
- 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
- Sitting tasks require slightly different characteristics than walking and turning.
- Future research will aim to quantify the influence object characteristics have on stability.

Acknowledgements

This research is supported by the Agency for Healthcare Research and Quality (R18HS024143-01).

References

- [1] Currie, L.M., Annual review of nursing research 24(1) (2006): 39-74.
- [2] Simpson, A. H. R. W., et al., Age and ageing 33(3) (2004): 242-246.
- [3] Figueiro, M. G., et al., BMC geriatrics 11(1) (2011): 49.