**Introduction**

- In the US, wheelchair cushions are deemed durable medical equipment – therein, the life expectancy is 60 months.
- Understanding variations in cushion performance over time during use can inform design and clinical interventions.

**Objectives**

- Document cushion performance over lifespan.
- Identify predictors of cushion degradation.
- Develop and validate a clinical measure of seat cushion degradation.

**Methods**

- 138 different cushions studied. Most common: Jay2 (32), Roho Hi Profile (26), Evolution (14).
- Repeated measures on 24 cushions.
- Mean cushion age = 24 months. Range: 1 day to 168 months.

**Data Collection**

- Client evaluation – diagnosis, weight, pressure ulcer history.
- Visual inspection of cushion.
- Cushion performance measures using human and buttock model interface pressure measurement (IPM).

**Interface pressure measurement (IPM)**

- IPM metrics include: magnitude, asymmetry, dispersion.

**Pressure magnitudes: ALL 162 cushions**

- Both model and subject pressures indicate NO relationship over time.

**Results**

- Roho and Jay2 Cushion Performance:
  - DI= ratio of IT pressures to total pressure.

**Conclusions**

- Within this study, cushion age is not a predictor of performance; therapists were more likely to judge a cushion as ‘inadequate’ as it ages (p=0.003) but no change in performance was evident.
- User body weight predicted the percentage of loading directly under the ischial region (R-sq = .38).
- Roho and Jay2 cushion performance varies considerably across users, but regression analysis indicates performance does not change appreciably over time.
- Because performance varies widely across users, cushion degradation is individualistic and difficult to discern systematically.

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