Center for Assistive Technology & Environmental Access

Georgia Tech College of Architecture

Methodology to Measure the Adjustability of Skin Protection Features of Wheelchair Cushions

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mobilityRERC

NIDRR

Adjustable Skin Protection Cushion (SADMERC)

- Meets skin protection requirement

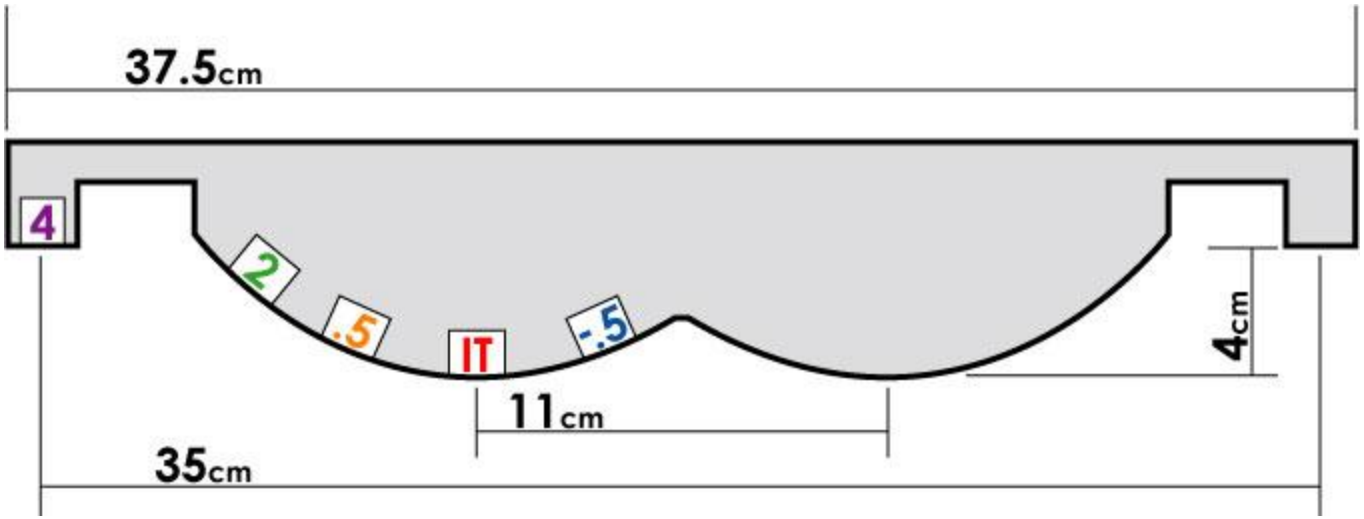
- Adjustable by the addition or removal of air, liquid, gel, or other fluid medium in physiologically appropriate areas of the cushion to promote pressure reduction.

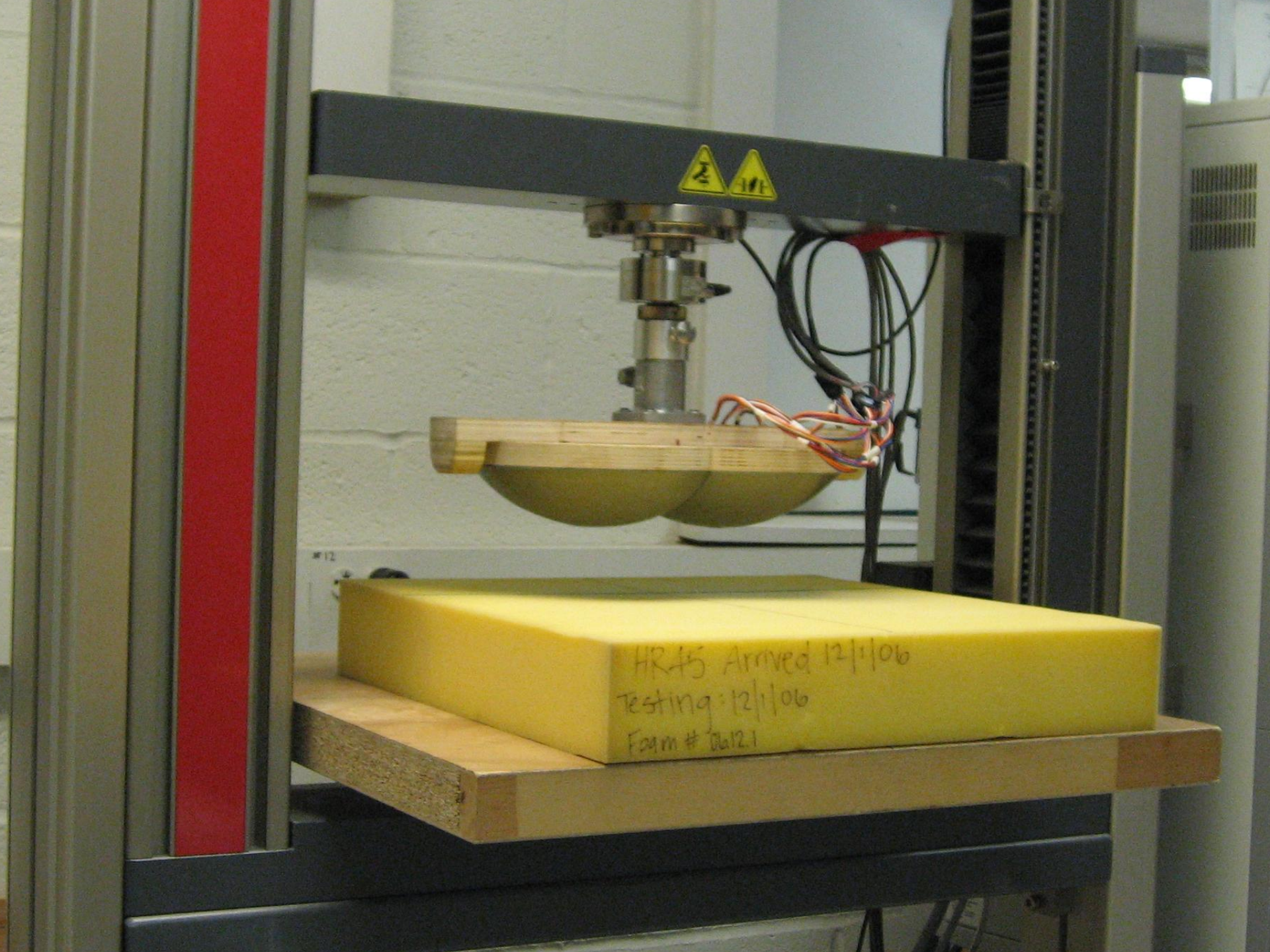
Constructs of Pressure Relief

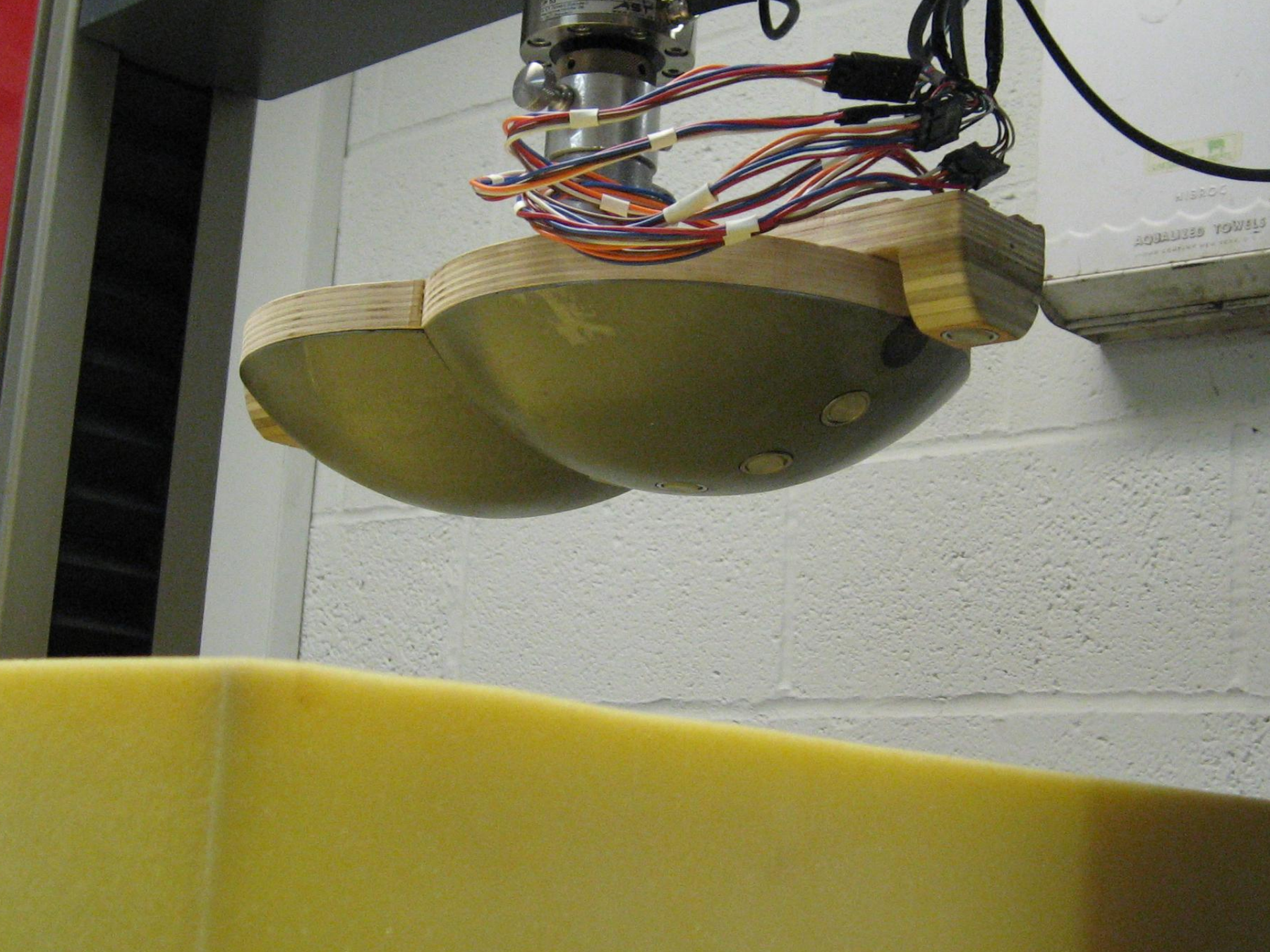
- Magnitude
- Immersion
- Pressure Redistribution
  - Envelopment
  - Off-Loading

Test Matrix

	Model A	Model B
Low Load		
High Load		


37.5cm
4
2
.5
IT
-.5
4cm
11cm
35cm


HR45 Arrived 12/1/06
Testing: 12/1/06
Foam # D6121


AQUALISED TOWELS

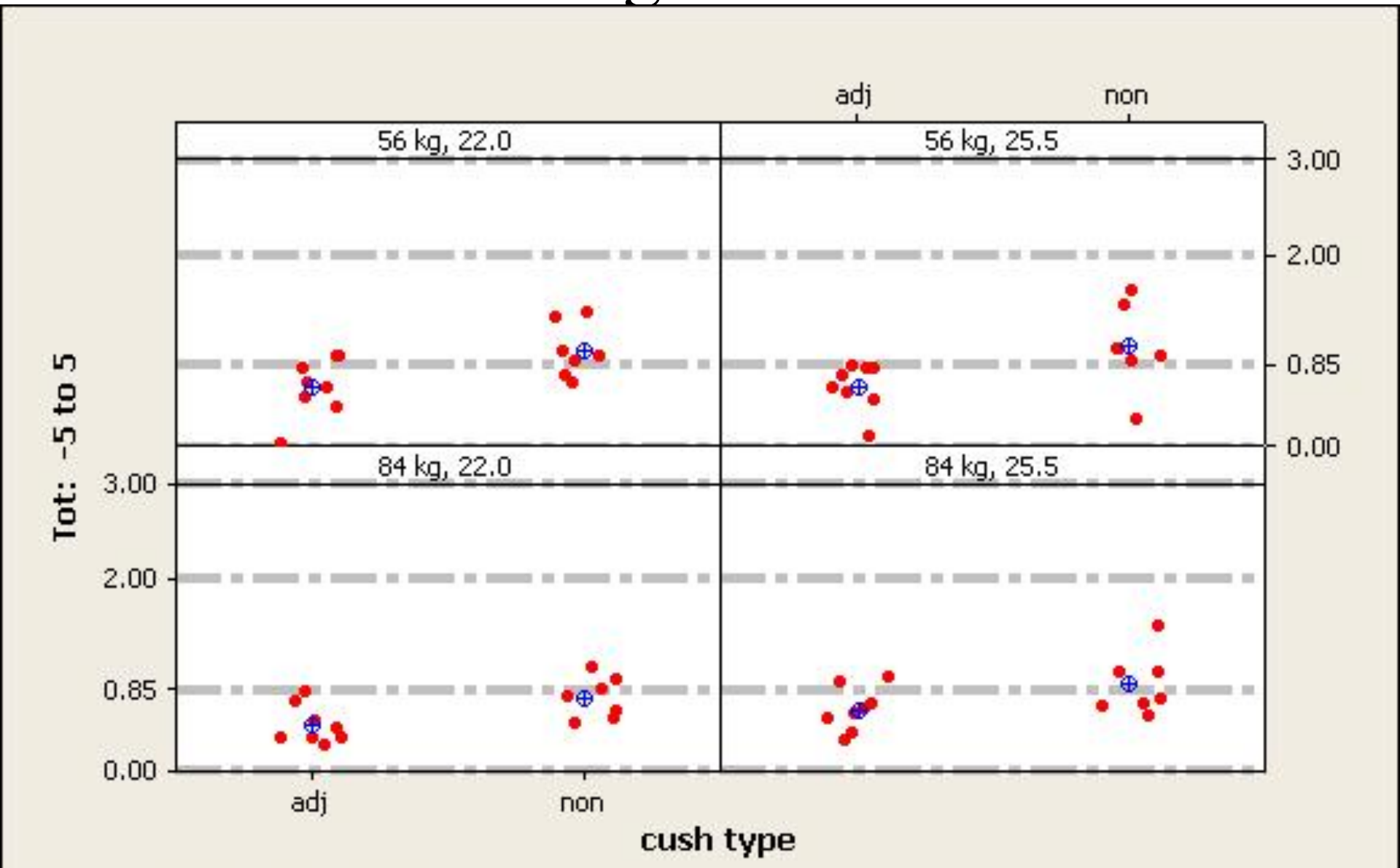
Protocol

- Cohort includes skin protection and adjustable skin protection cushions.
- 3 trials per condition in test matrix.
- Cushion is compared to reference foam

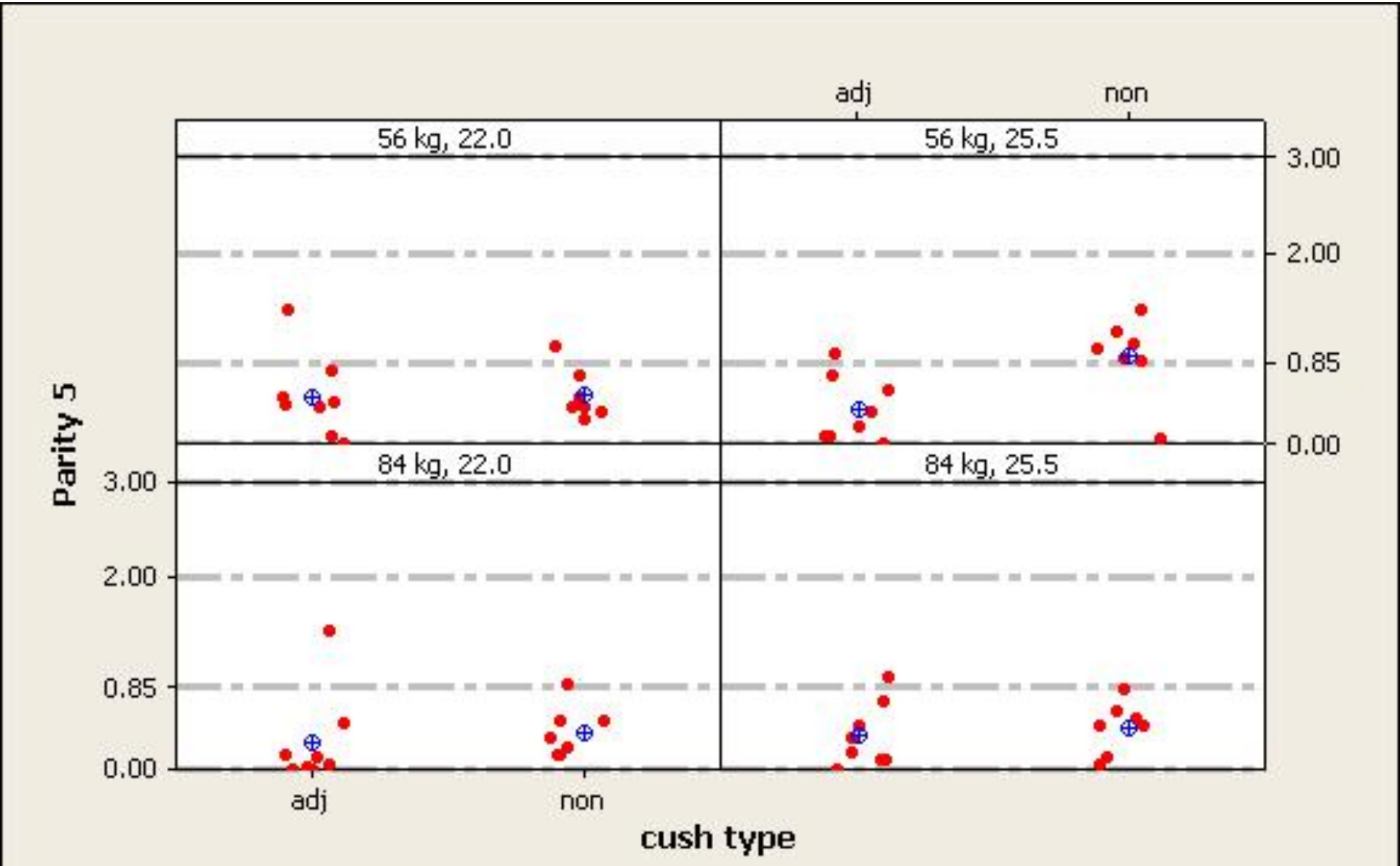
Metrics

Metric	Description	COR/Mean
Magnitude Total: -5 to 5	Sum of the 3 most medial sensors	14 %
Envelopment Parity 5	Indicates equality between IT and lateral 5 sensor	12 %
Off-Loading Parity 40	Indicates equality between IT and trochanteric sensor.	7 %
Immersion	How far the model has been immersed into the cushion.	1 %

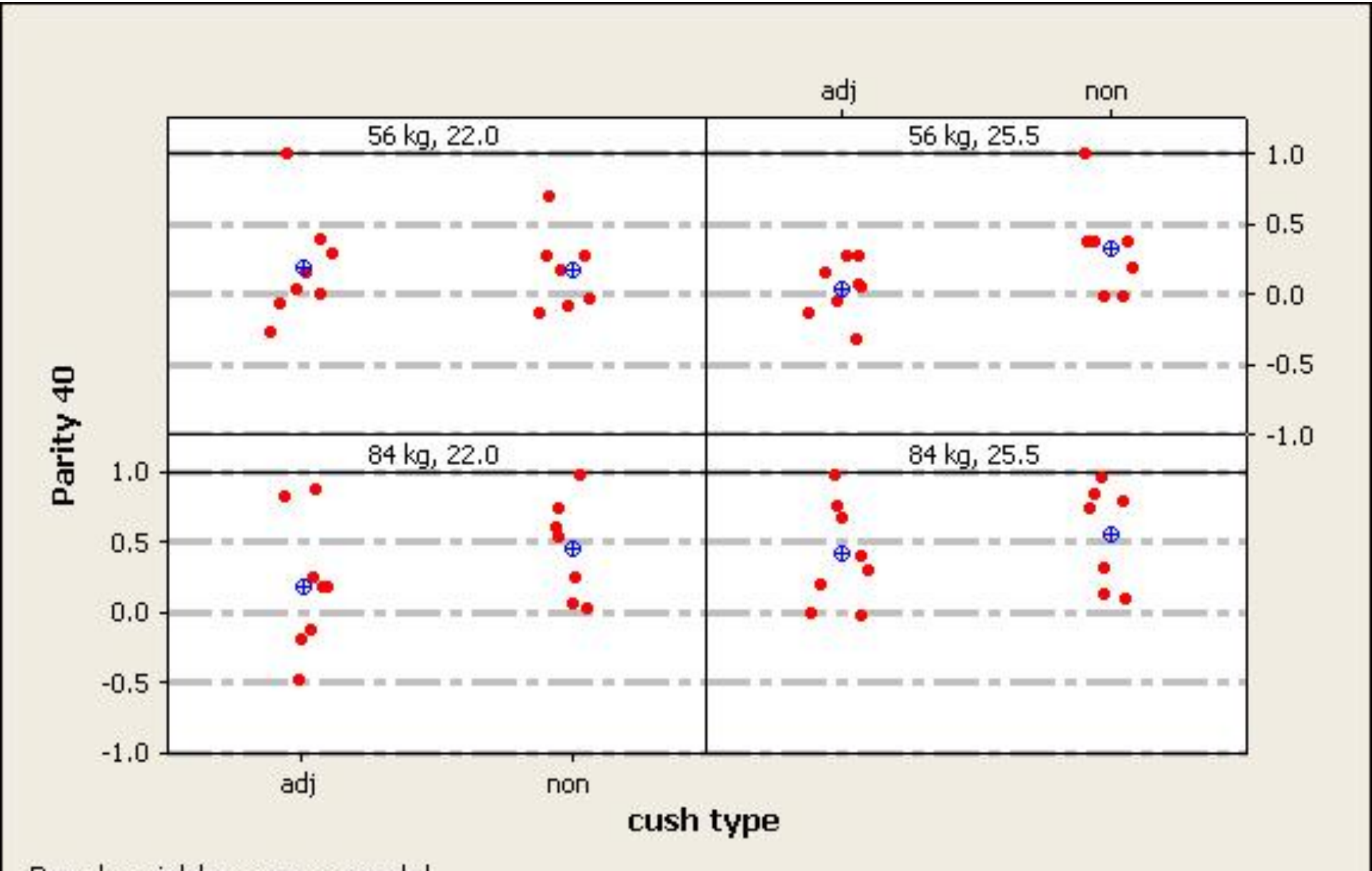
Magnitude


adj
non
56 kg, 22.0
56 kg, 25.5
84 kg, 22.0
84 kg, 25.5
3.00
2.00
0.85
0.00
Tot: -5 to 5
adj
non
cush type

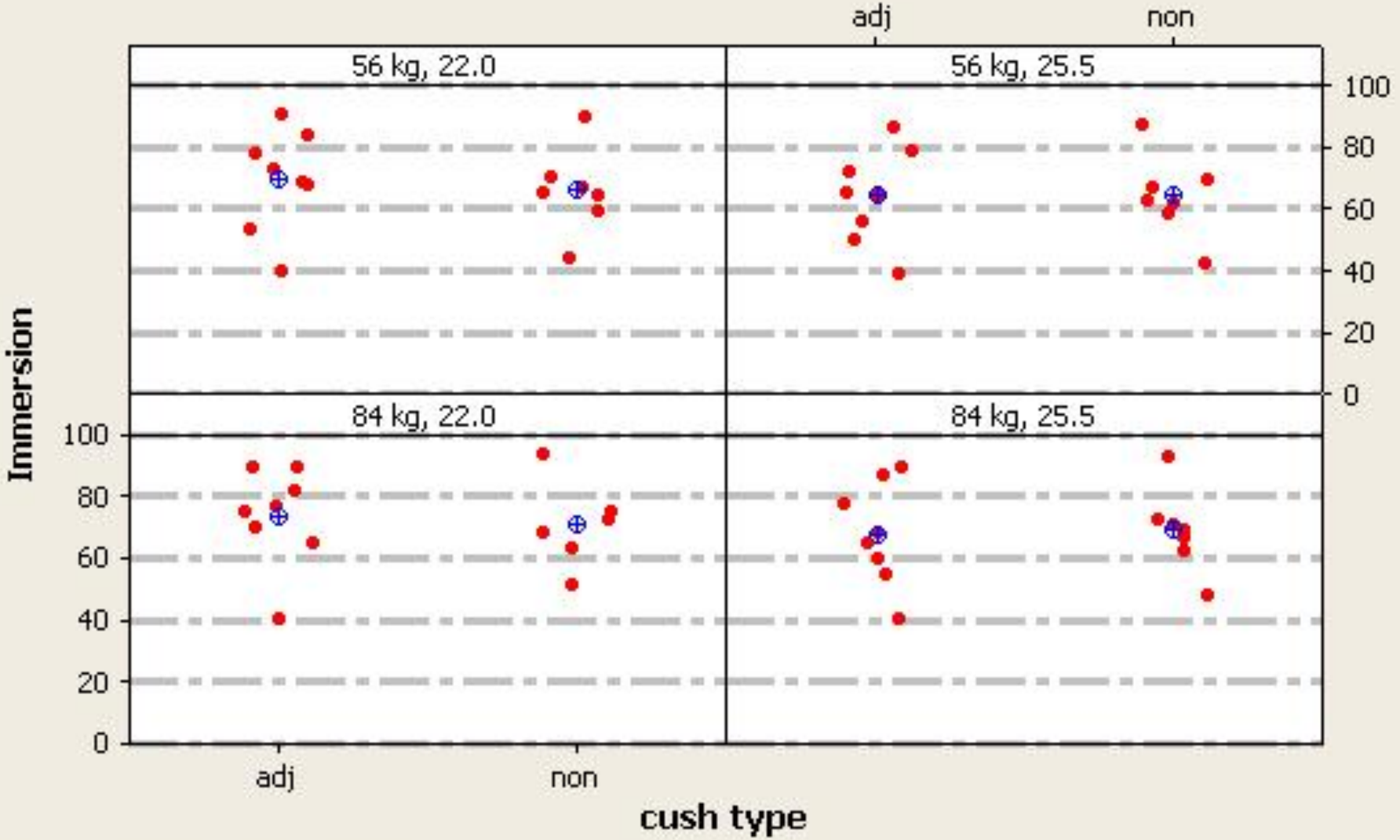
Envelopment



Off-Loading


adj
non
56 kg, 22.0
56 kg, 25.5
84 kg, 22.0
84 kg, 25.5
1.0
0.5
0.0
-0.5
-1.0
Parity 40
adj
non
cush type

Immersion



Panel variables: mass, model

Adjustability Delineation

- At least one adjustment must meet criteria on all 3 constructs
- Extreme loading conditions only

Discussion

- Protocol determines adjustability based on body masses and body types
- Cushion adjustments may not be as suitable for model as for a person
- Inter & Intra lab validation is necessary

Funding for this study was provided by NIDRR project number H133E030035