How Much Will I Improve After My Surgery and Will I Be Normal? The Critical Importance of Collecting and Discussing Patient Reported Outcomes Measures (PROMs) With Adult Spinal Deformity (ASD) Patients

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Disclosures Shay Bess

- Consulting= Allosource, K2M
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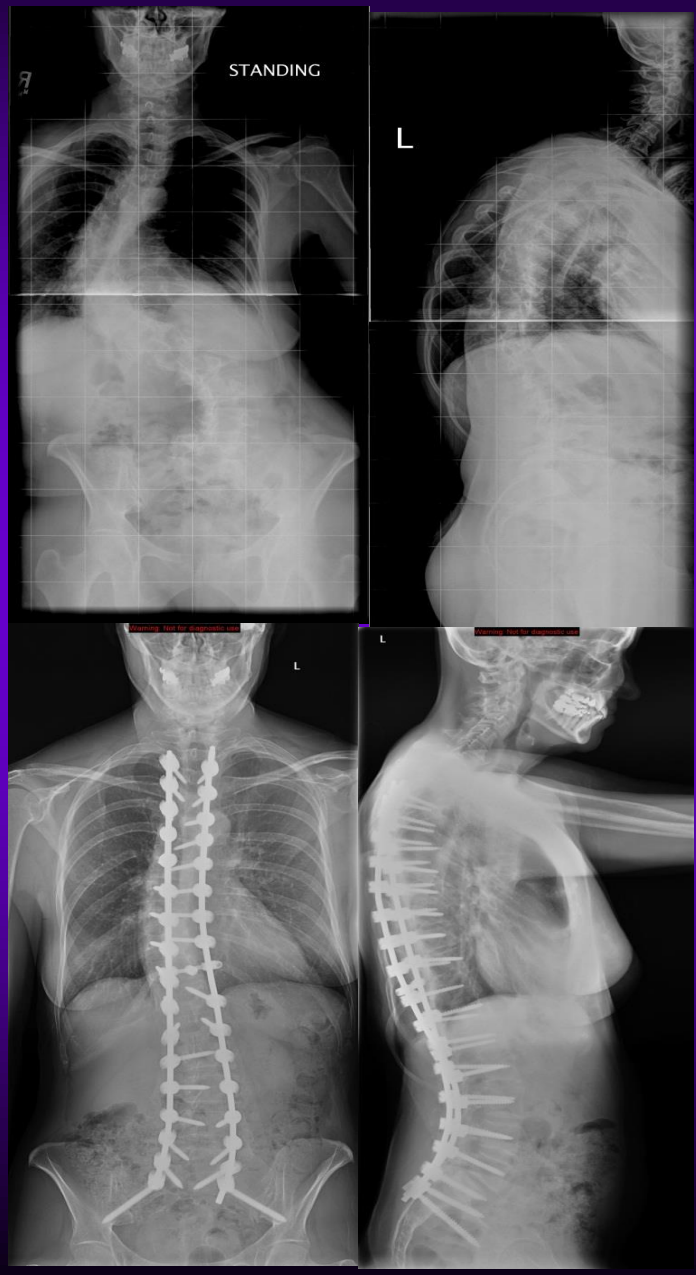
- Scientific advisory board= Allosource

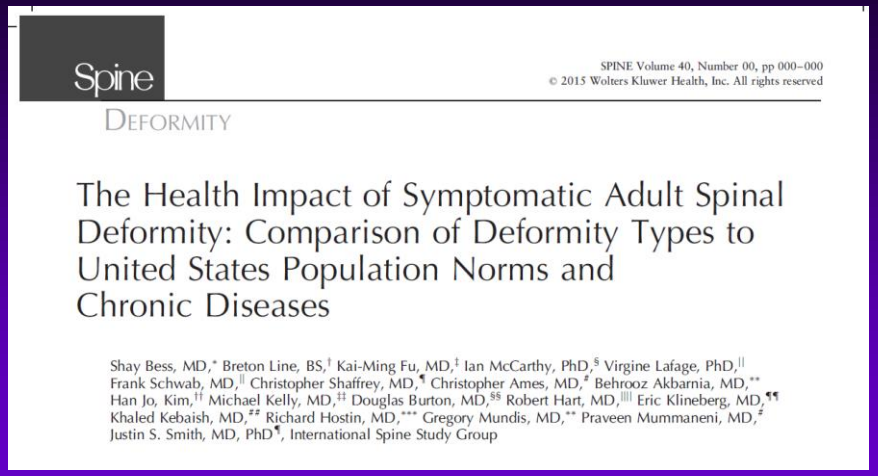
Background Information

- Common pre-surgical questions
  - What will improve?
  - How much I will improve?
  - Will I be normal?
- Outcomes ASD surgery
  - PROMs= improvement pain, function
  - PROMs= difficult to understand
  - MCID, SCB= difficult to understand
- Little understandable information (patient perspective)
  - What will improve
  - How much it will improve



ASD and Disability

- ISSG Spine 2016
- Quantify ASD disease impact
  - ASD cohort (n=497)
  - No prior surgery
- ASD SF-36 PCS, MCS
  - Population norm
  - Generational norms
  - Chronic disease
- ASD vs. U.S. generational norms: PCS
  - <25th percentile all generations
  - More rapid decline than U.S. general



Spine
DEFORMITY

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The Health Impact of Symptomatic Adult Spinal Deformity: Comparison of Deformity Types to United States Population Norms and Chronic Diseases

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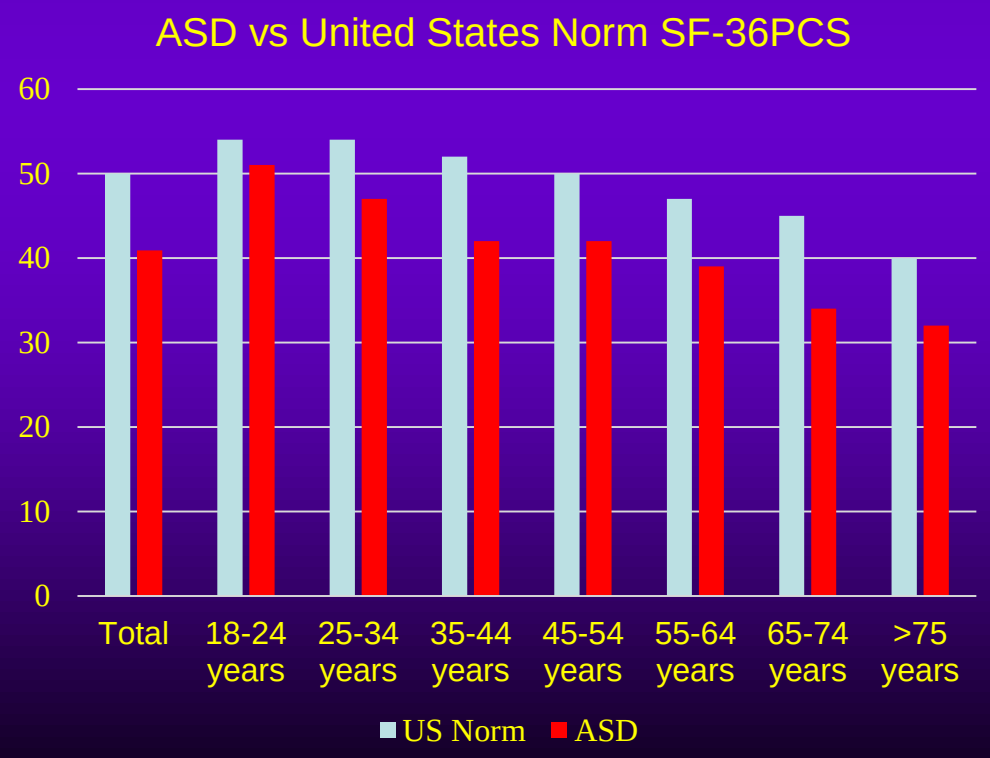
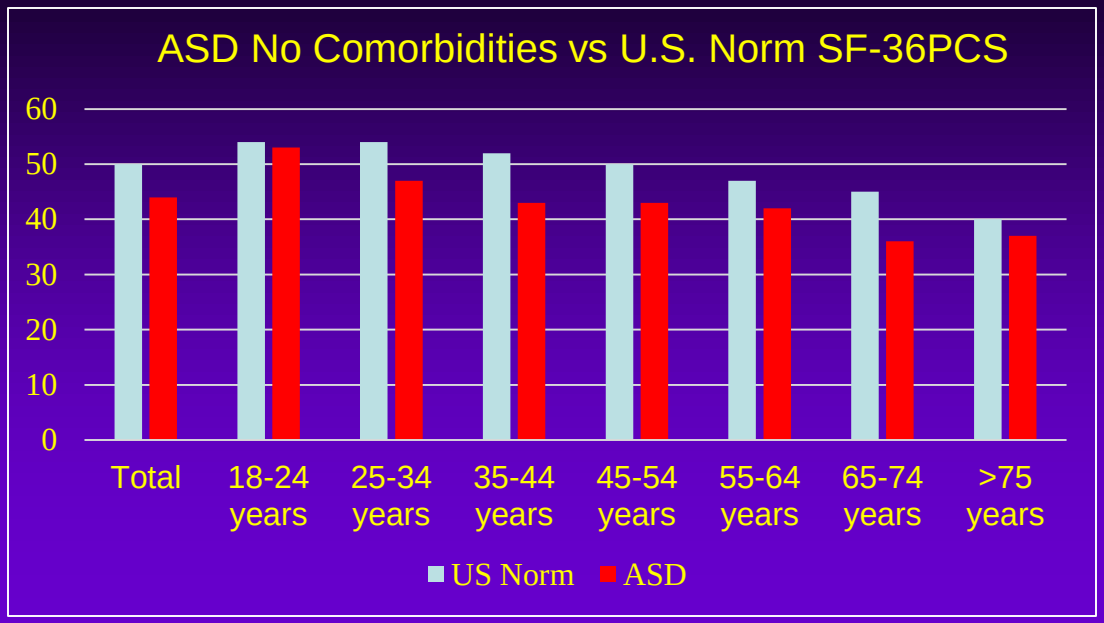
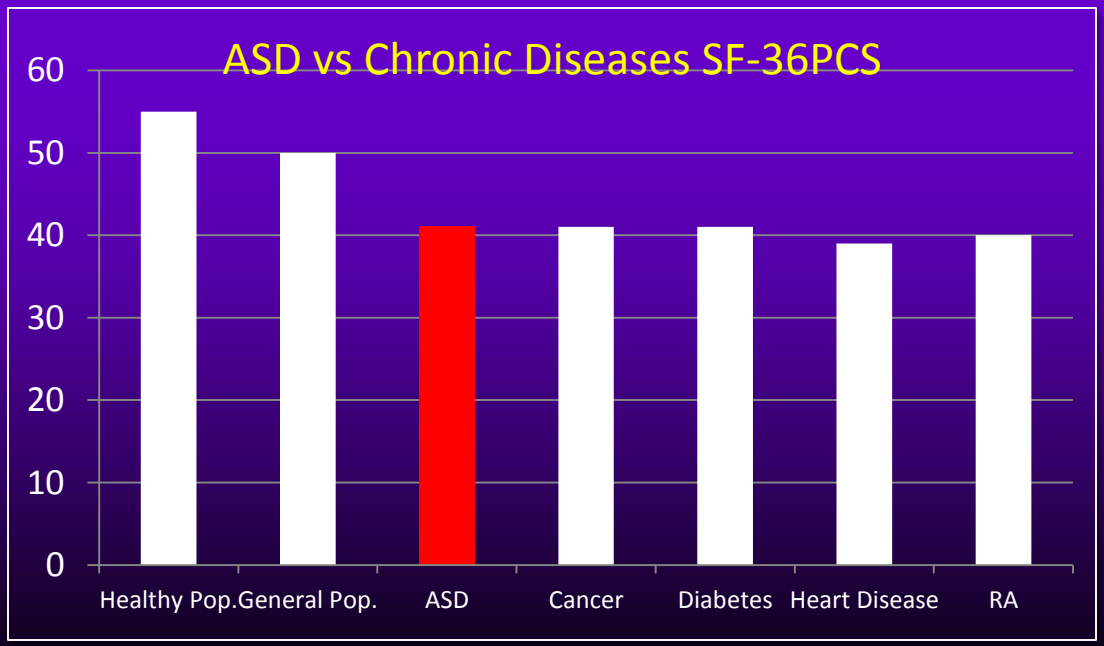


ASD and Disability

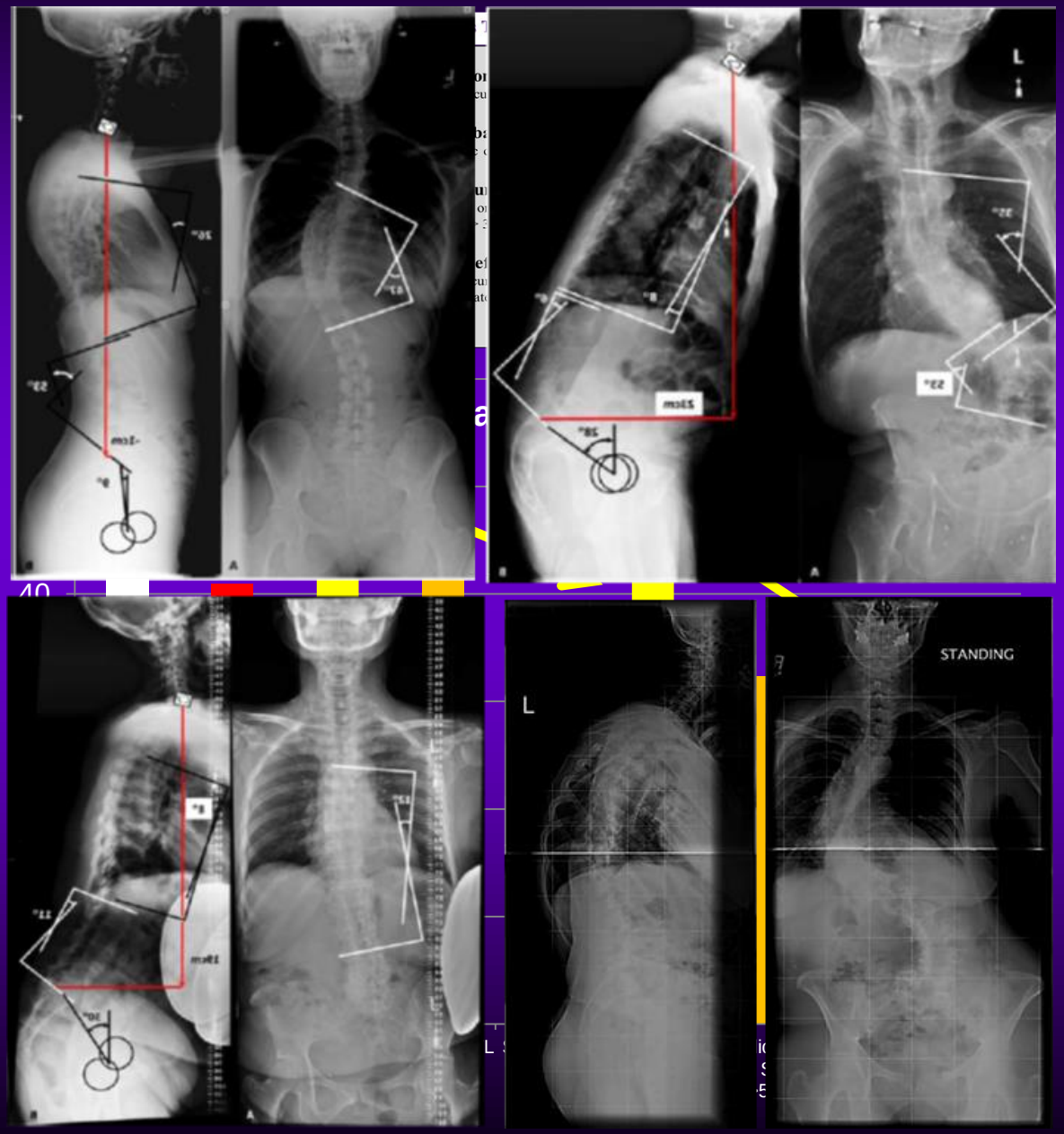
- ASD no other comorbidities vs U.S.
  - <25th percentile
  - All ASD generations (except 18-24 yr)
  - More rapid decline than U.S. general
- ASD vs. US Healthy and Disease Norms
  - >1 MCID back pain/sciatica
  - >1 MCID Hypertension
- Similar
  - Cancer
  - Diabetes
  - Heart disease



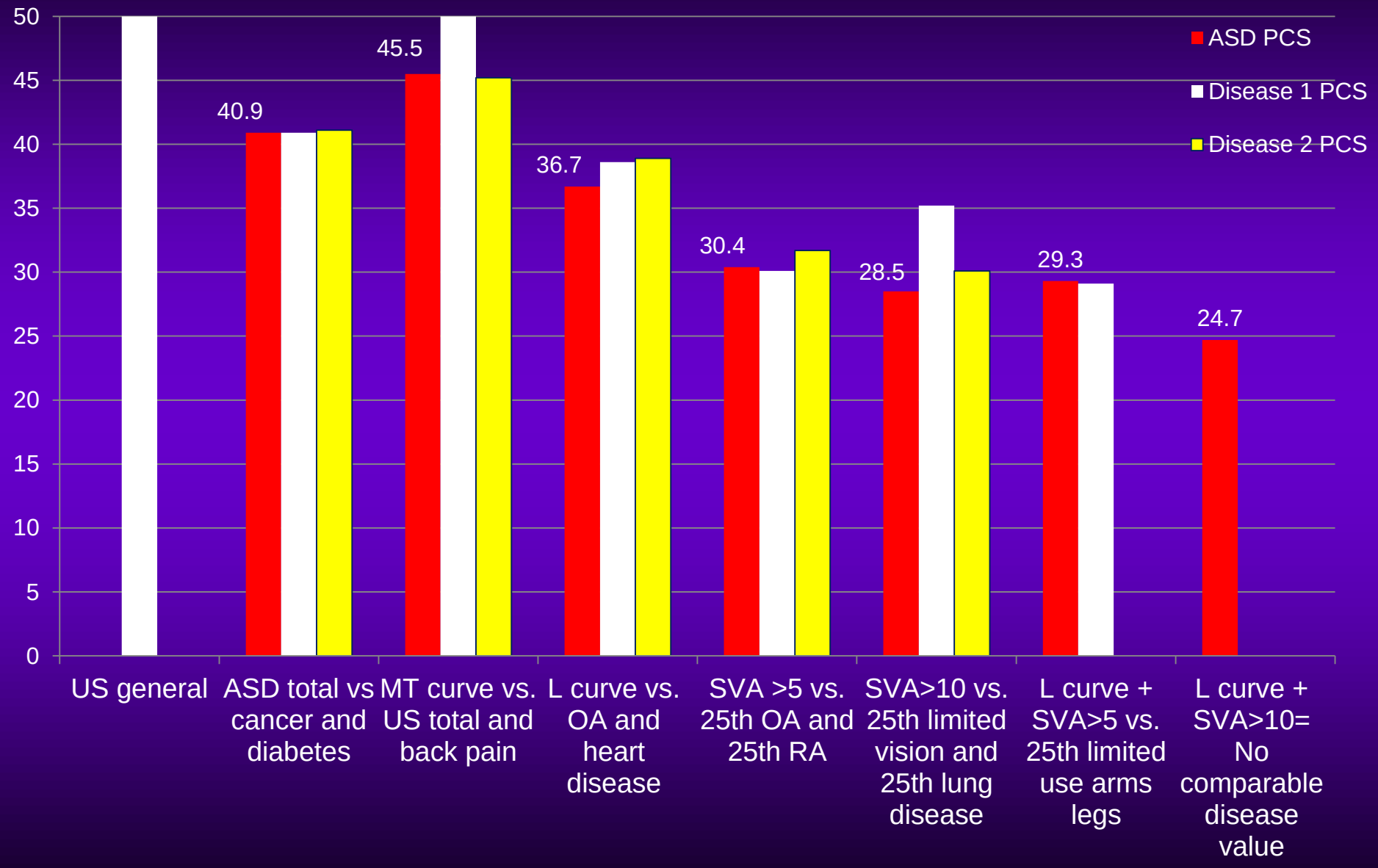


ASD Deformity Type and Disability

- ASD heterogenous
  - Type (sagittal, coronal, mixed)
  - Location (thoracic, lumbar, etc)
  - Severity
- Cohort division SRS-Schwab Classification
- PCS worsens
  - Curve location
  - Sagittal malalignment



ASD Type, Severity and Disease Correlates

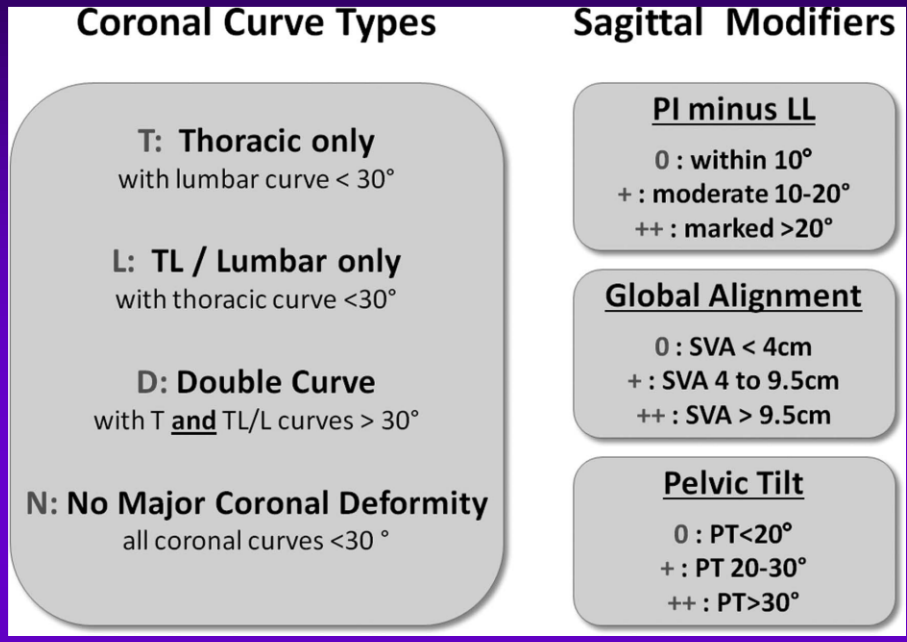


Study Question and Purpose

- Baseline disability dependent ASD
  - Type and severity
- Surgical improvement dependent ASD?
  - Type and severity
- Multi-center, prospective ASD database
- Different spine deformity types
  - SRS-Schwab ASD Classification
- Quantify postoperative percentage improvement
  - Back and leg pain
  - Self-image
  - Physical and social function
  - Mental health
- Assess return to generational norms
- PROM domains most impacted

Materials and Methods

- Data source
  - ISSG database
  - Multi-center, prospective, ASD
- Database inclusion criteria
  - Age >18 years
  - Minimum one: scoliosis >20°, SVA >5cm, PT>25°, TK >60°
- Study inclusion criteria
  - Surgery for ASD
  - PSF ≥4 levels
  - Minimum two year follow-up
- ASD type
  - SRS-Schwab ASD Classification



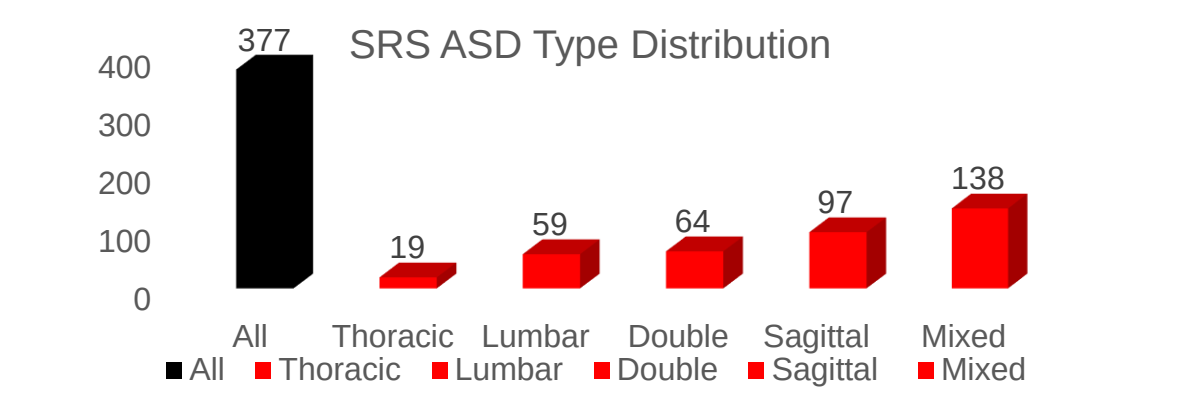
Materials and Methods

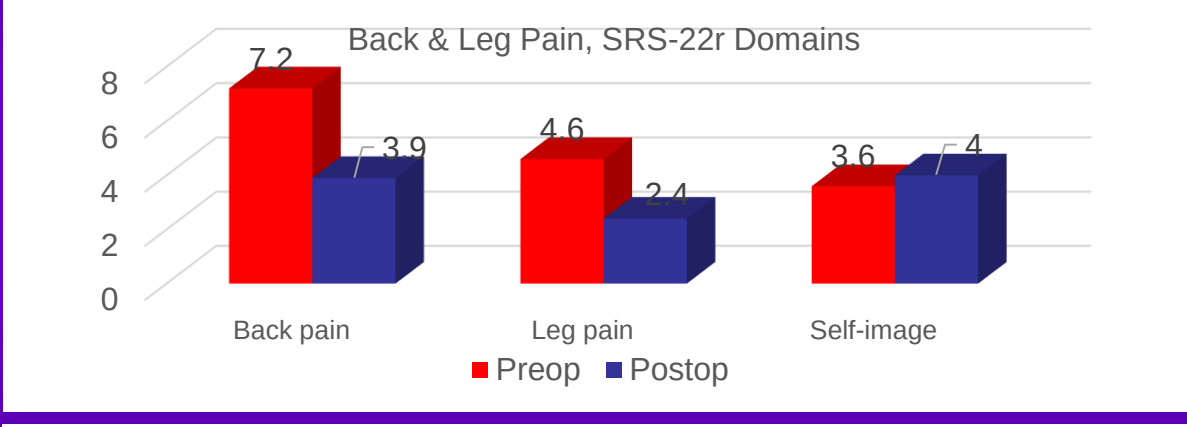
- Percent change ASD type
- Preoperative vs. last follow up
  - NRS back and leg pain
  - Specific domains
    - SF-36
    - SRS-22r
- Domains >1 SD generational norm
  - Most impacted domains
  - Return to “normal”

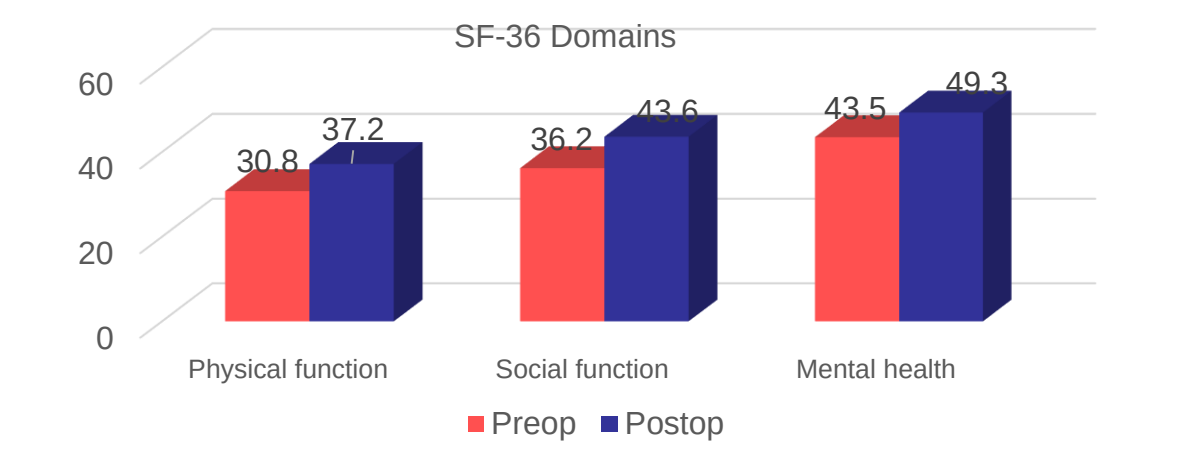
PROM Domains
SF-36
Physical function
Bodily pain
Role physical
General health
Vitality
Social function
Role emotional
Mental health
SRS-22r
Pain
Activity
Appearance
Mental health

Results: All ASD Patients (n=377)

- All ASD
  - N= 377/582 (65%)
  - Age 57.8 years
  - ASA grade= 2.4
  - Scoliosis= 42.6°
  - SVA= 63.9mm
  - PSF= 11.7 levels
- Pain improvement
  - Back= 44%
  - Leg= 39%
- Self-image= 61%
- Function improvement
  - Physical= 30%
  - Social= 35%

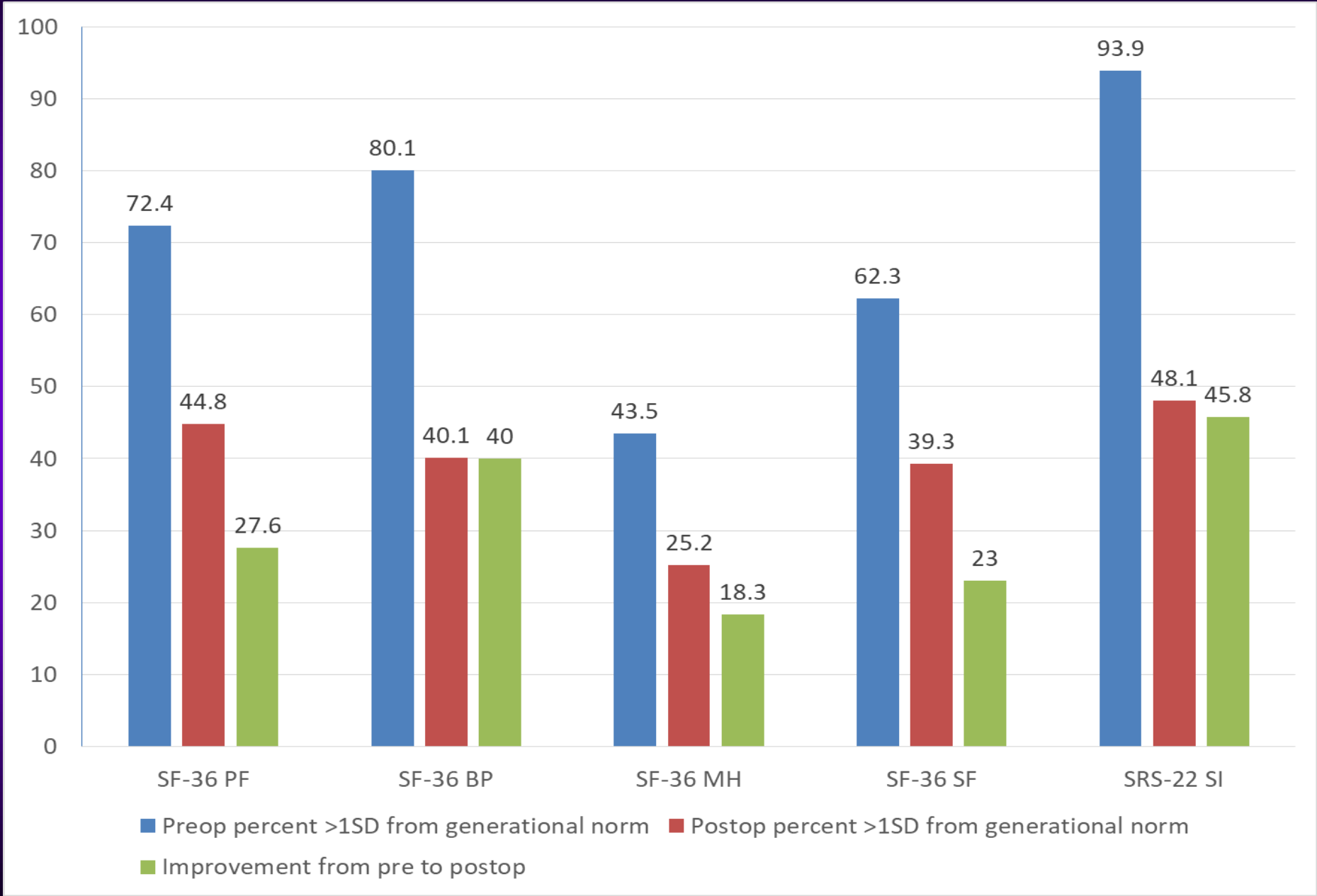






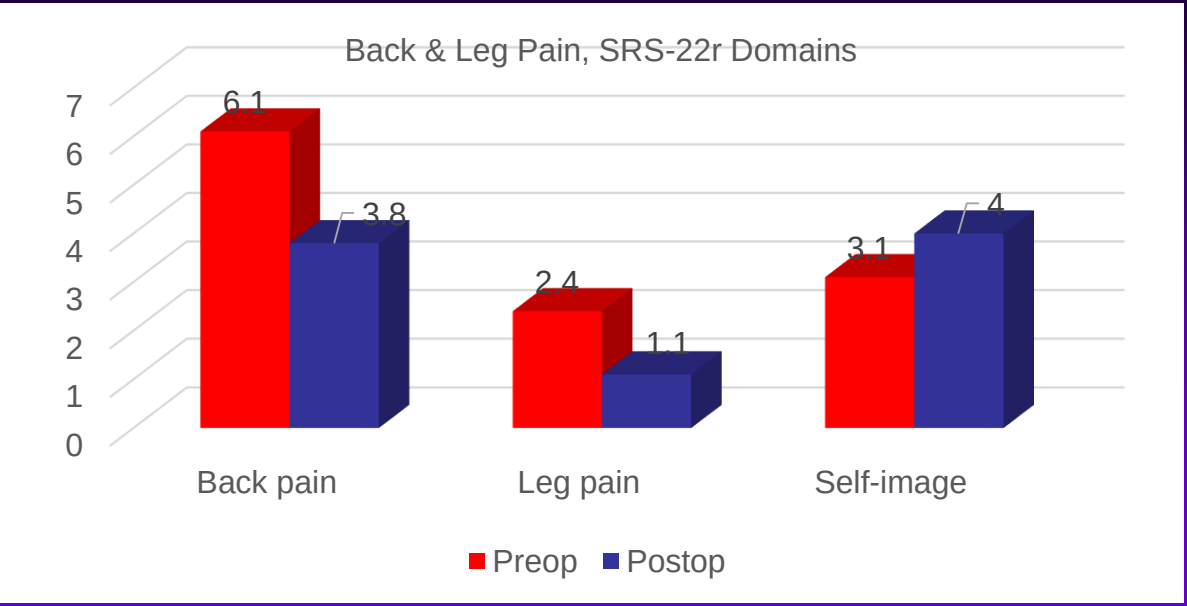
Results: All ASD vs. Generational Norm

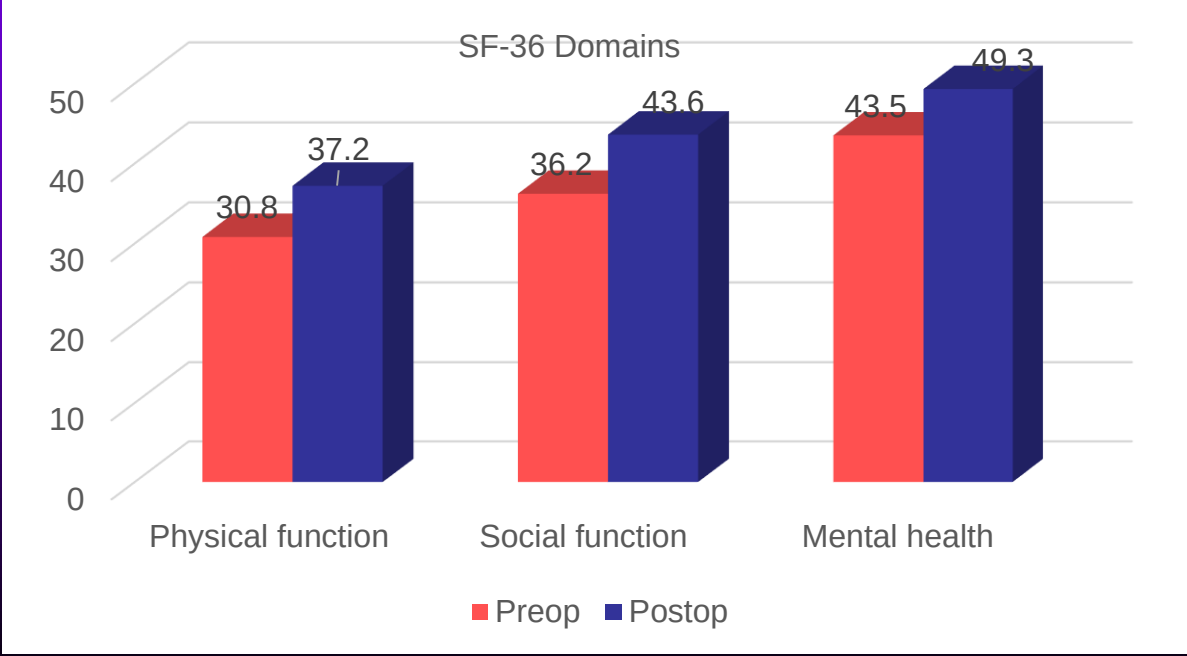
Greatest gains= bodily pain, self-image; **no returns to normal**



Results: Thoracic ASD (n=19)

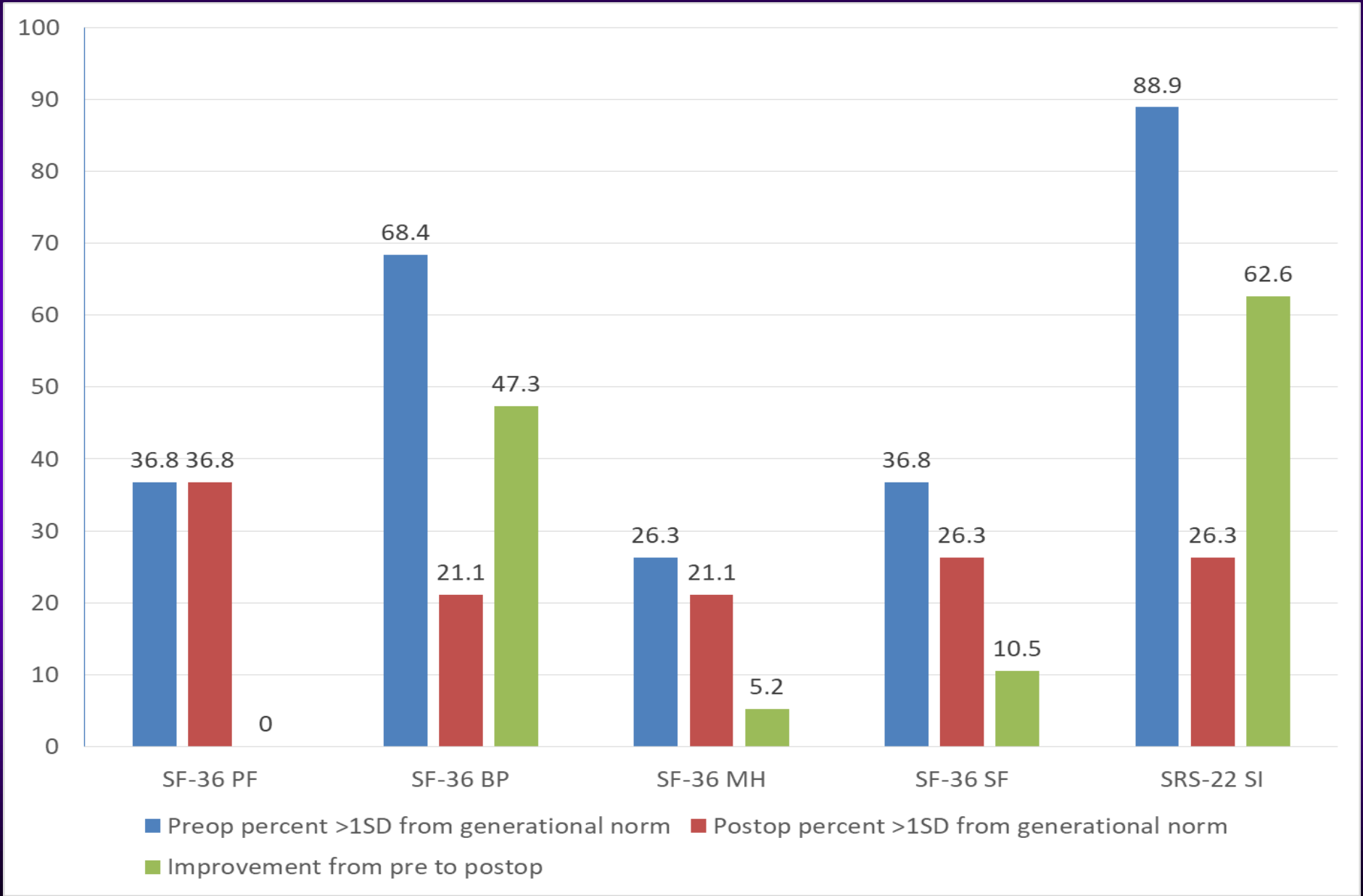
- Thoracic ASD
  - Age 33.1 years
  - ASA grade= 1.7
  - Scoliosis= 47.1°
  - PSF= 11.3 levels
- Pain improvement
  - Back= 34%
  - Leg= 46%
- Self-image= 36%
- Function improvement
  - Physical= 18%
  - Social= 15%
  - Mental= 17%





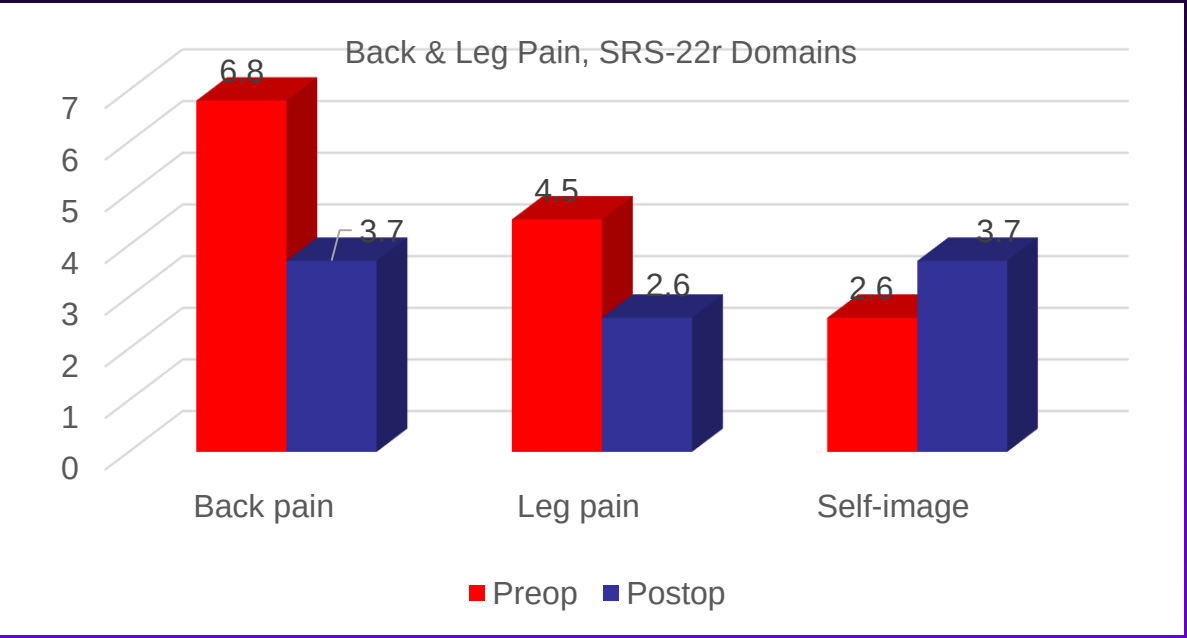
Results: Thoracic ASD vs. Generational Norm

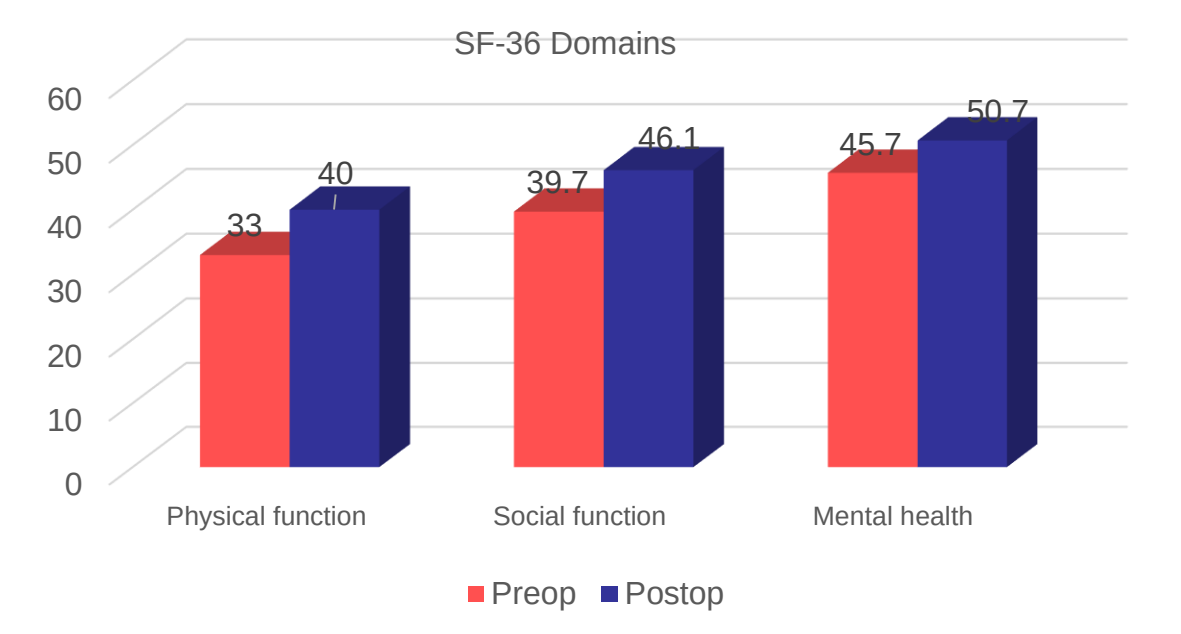
Best return to norm all groups; bodily pain, self-image



Results: Lumbar ASD (n=59)

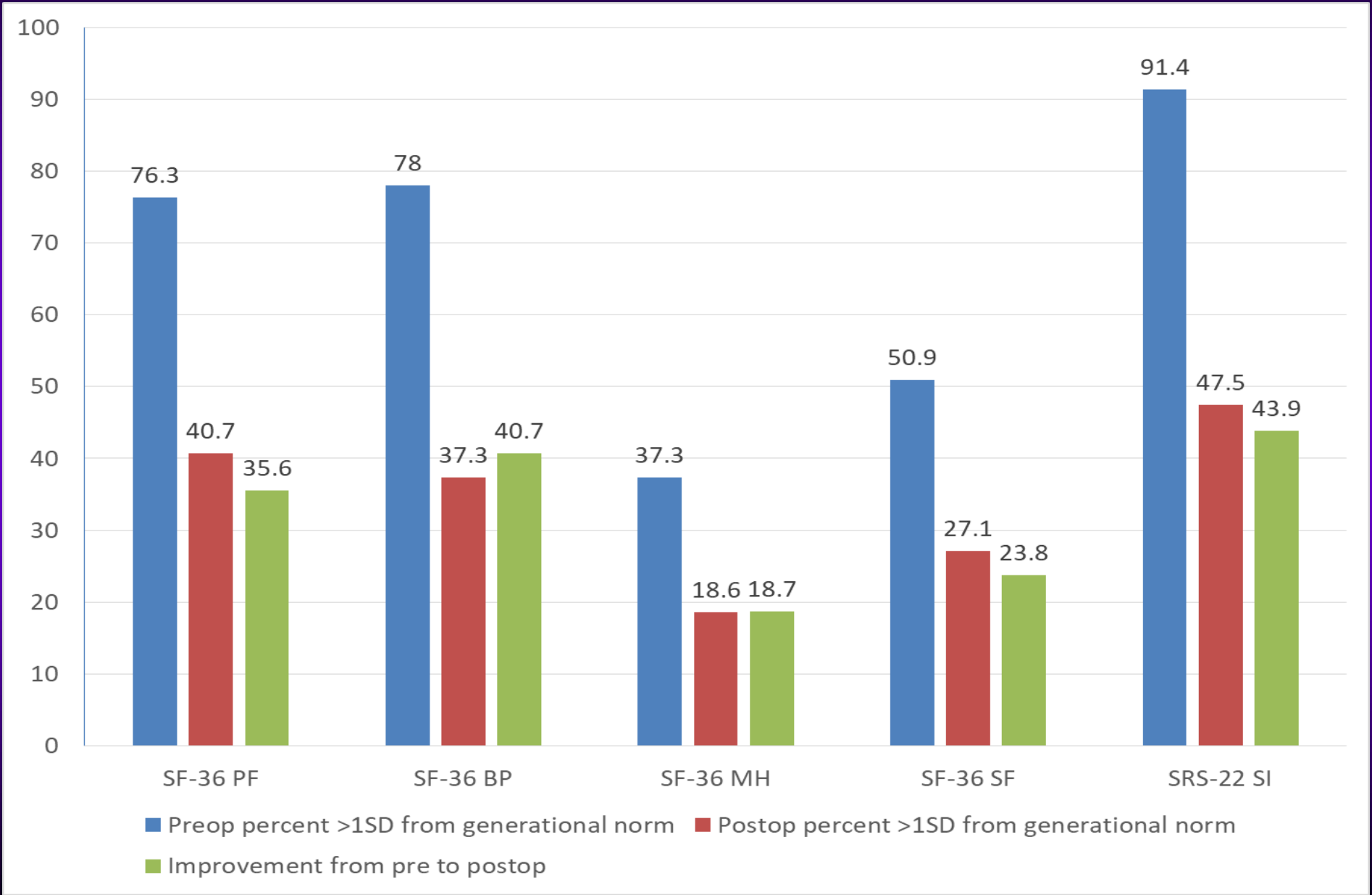
- Lumbar ASD
  - Age 55.6 years
  - ASA grade= 2.2
  - Scoliosis= 41.4°
  - PSF= 10.7 levels
- Pain improvement
  - Back= 47%
  - Leg= 42%
- Function improvement
  - Physical= 27%
  - Social= 32%
  - Mental= 20%
- Self-image= 58%





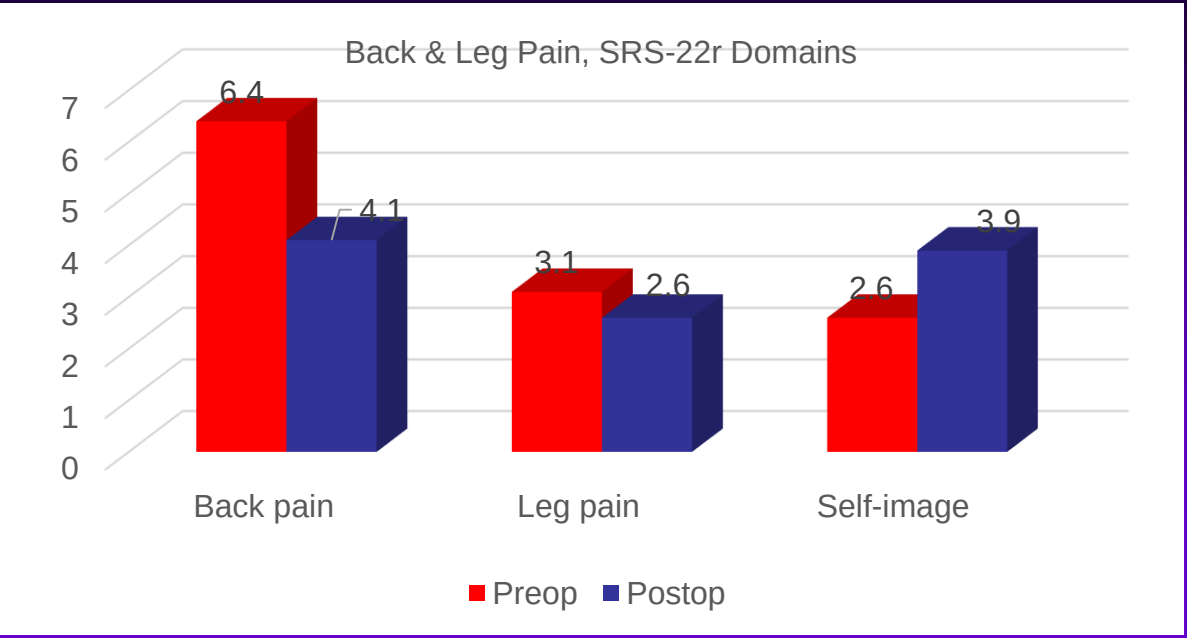
Results: Lumbar ASD Generational Norm

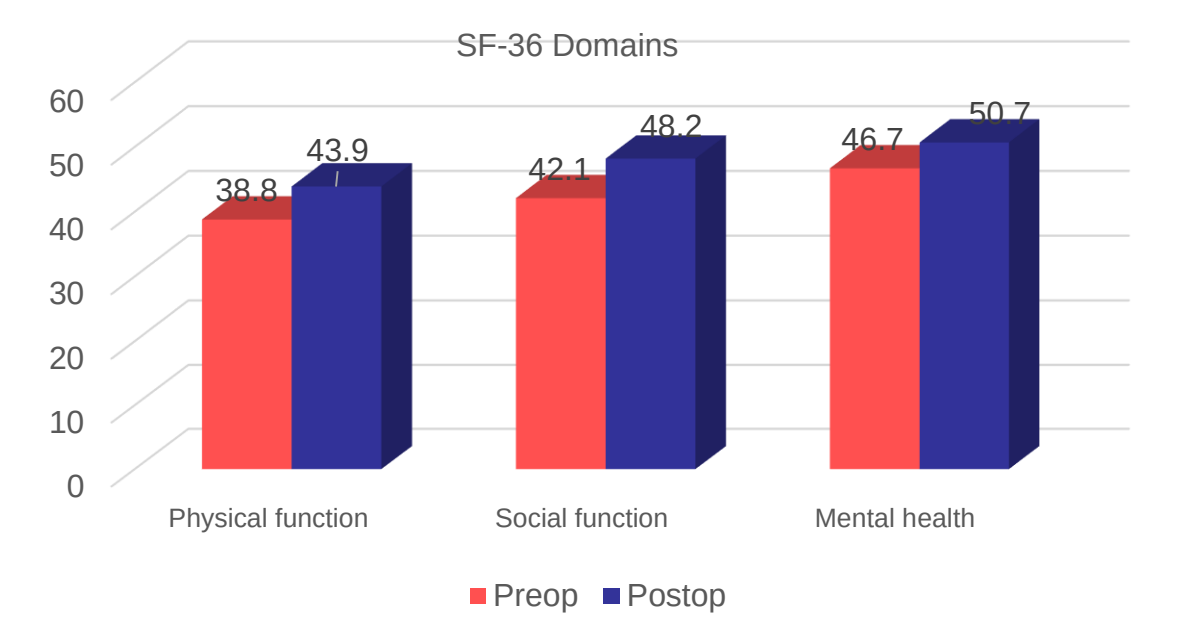
Greatest gains; bodily pain, self image



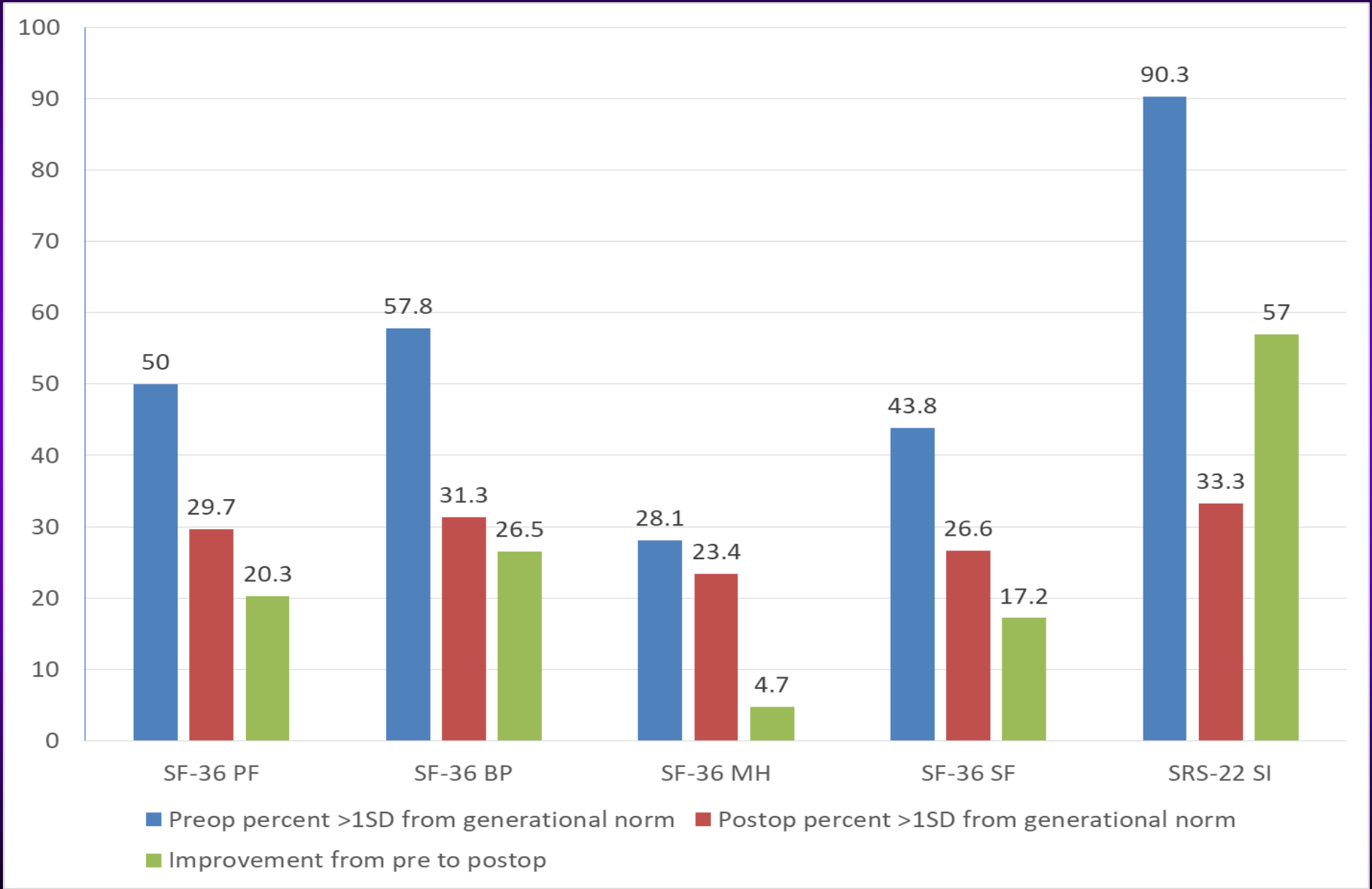
Results: Double ASD (n=64)

- Double ASD
  - Age 48.5 years
  - ASA grade= 2.1
  - Scoliosis= 62.3°
  - PSF= 12.7 levels
- Pain improvement
  - Back= 34%
  - Leg= 23%
- Function improvement
  - Physical= 21%
  - Social= 27%
  - Mental= 18%
- Self-image= 58%



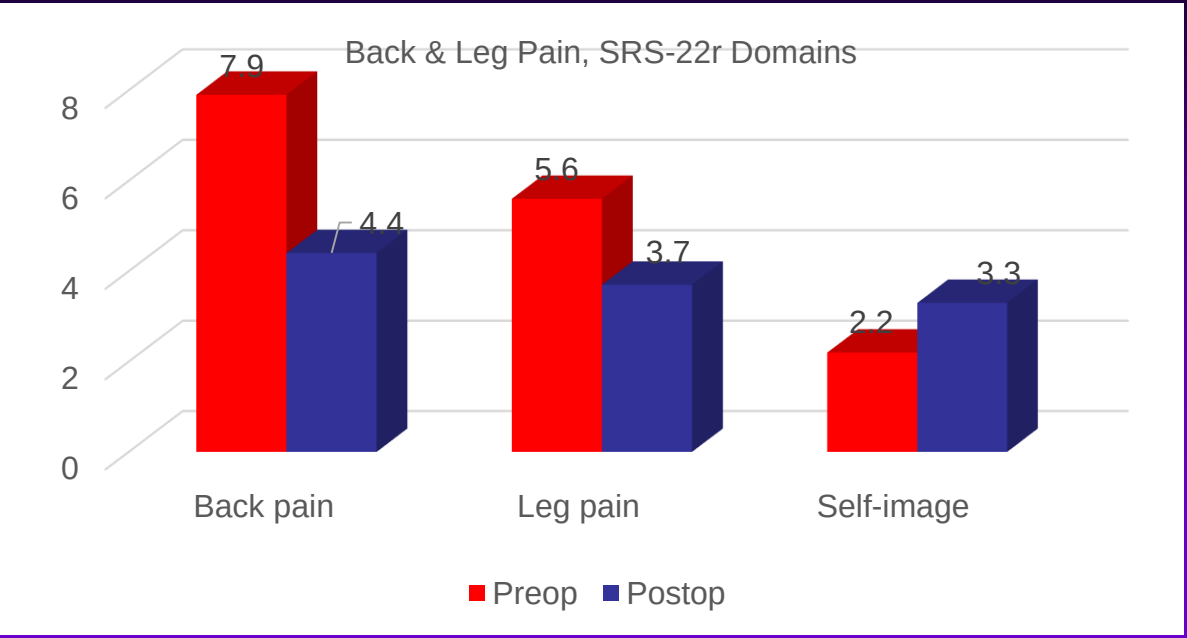


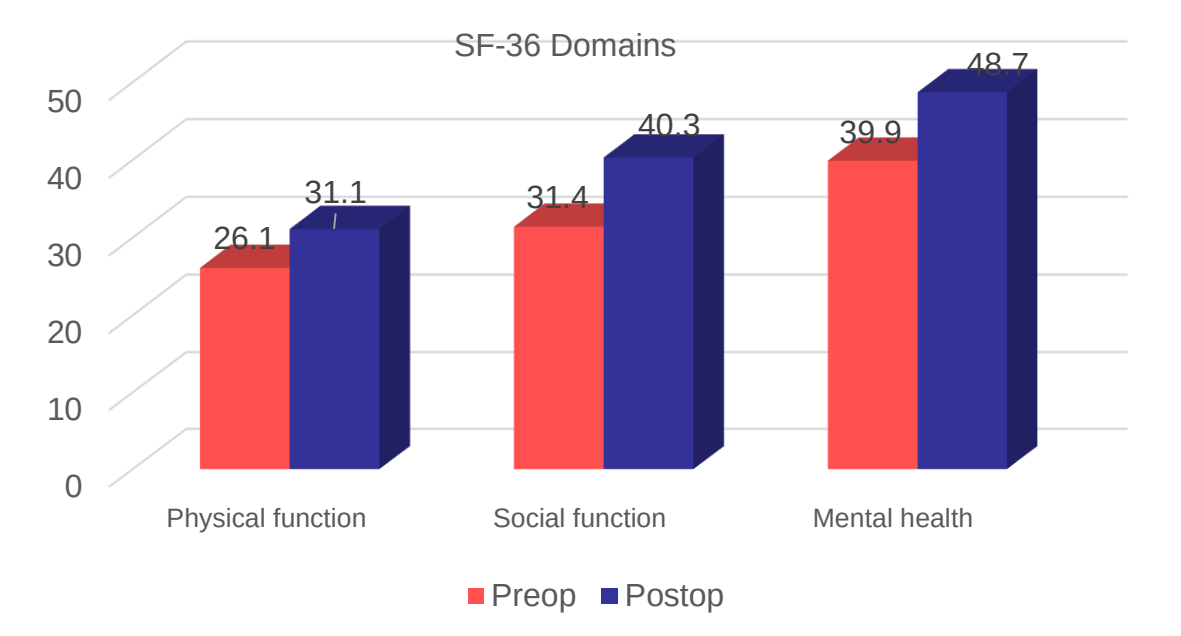
Results: Double ASD Generational Norm
Greatest gains; self image



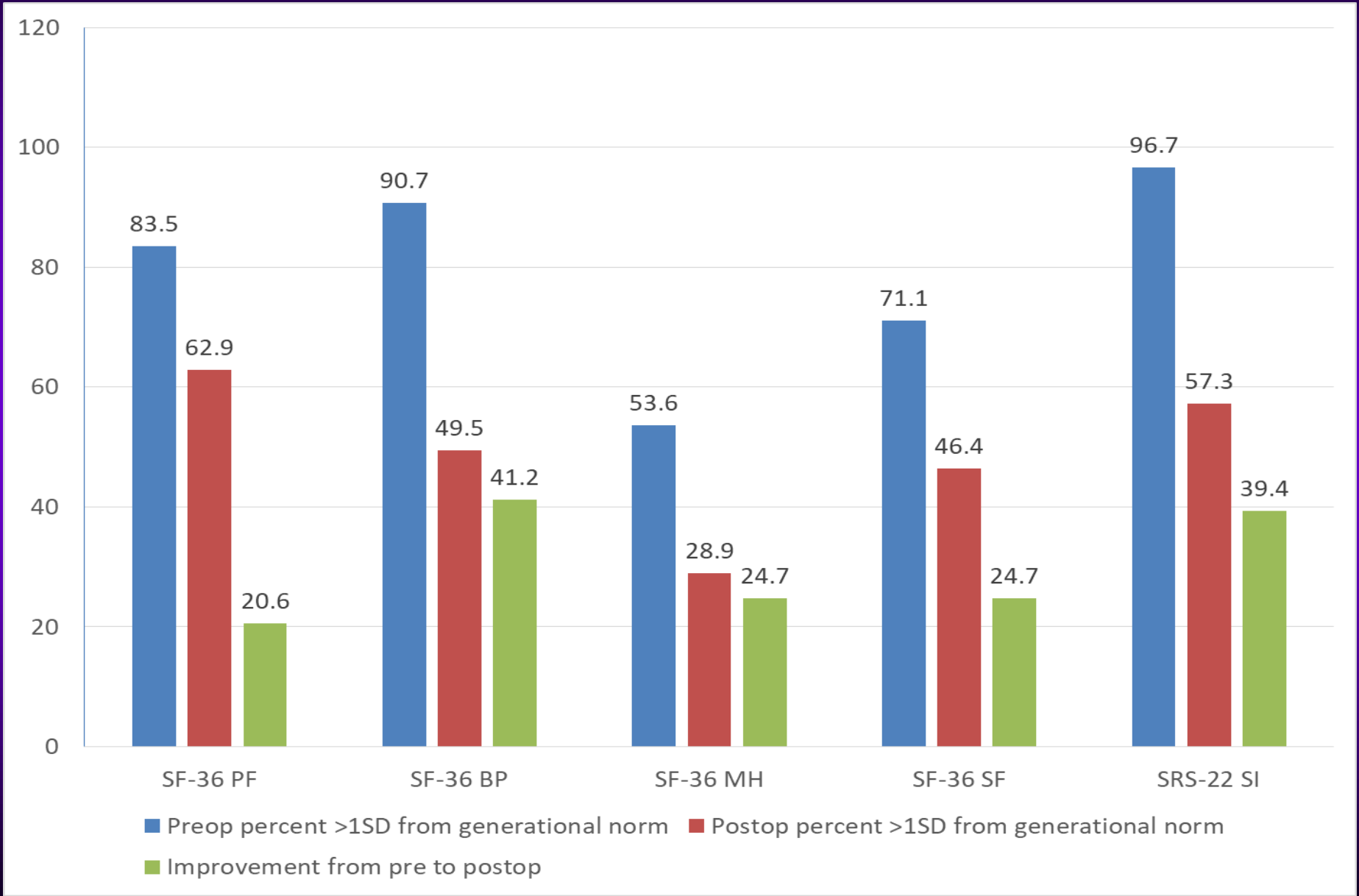
Results: Sagittal ASD (n=97)

- Sagittal ASD
  - Age 62.9 years
  - ASA grade= 2.6
  - SVA= 109.3mm
  - Prior surgery= 77.3%
- Pain improvement
  - Back= 44%
  - Leg= 34%
- Function improvement
  - Physical= 44%
  - Social= 38%
  - Mental= 18%
- Self-image= 61%



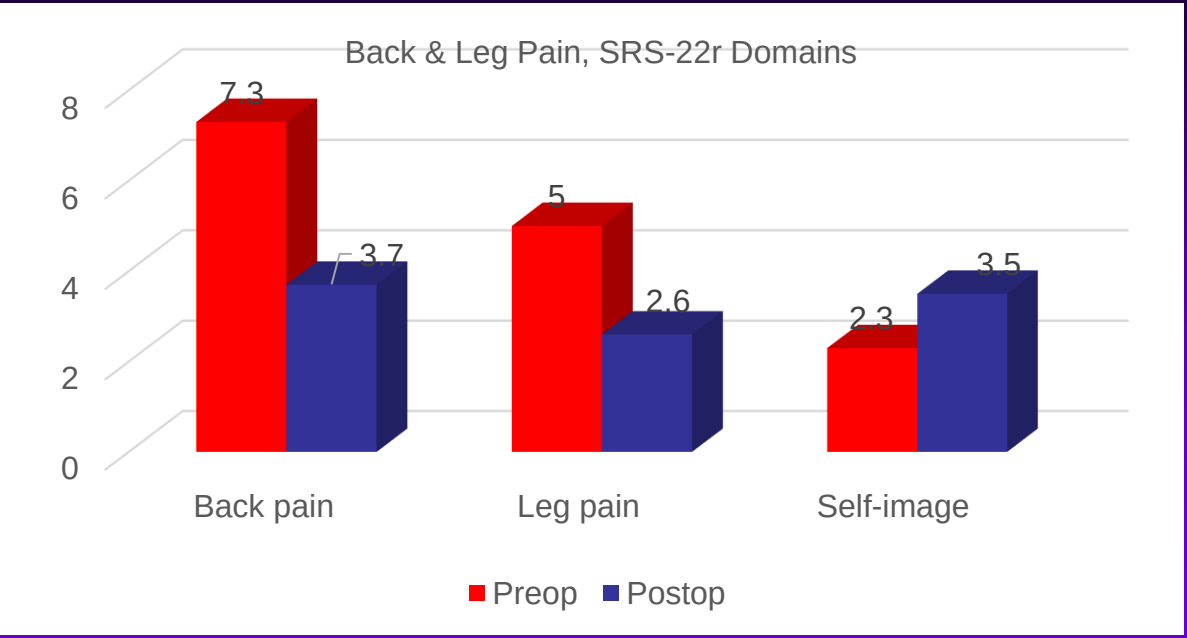


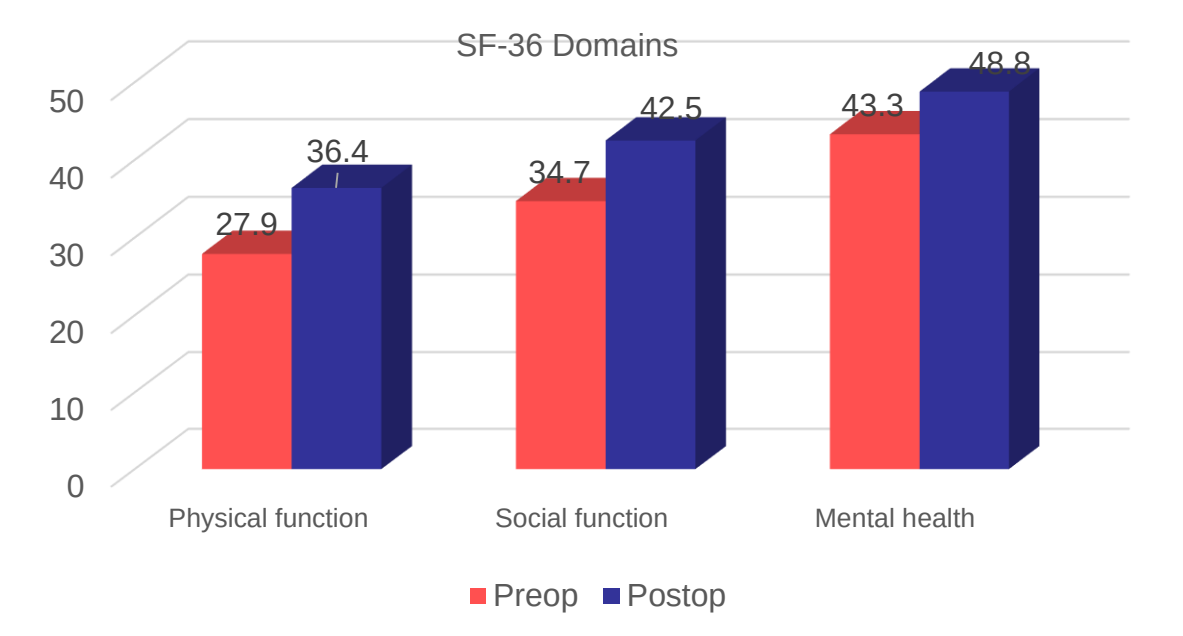
Results: Sagittal ASD Generational Norm
Worst returns to "normal"



Results: Mixed ASD (n=138)

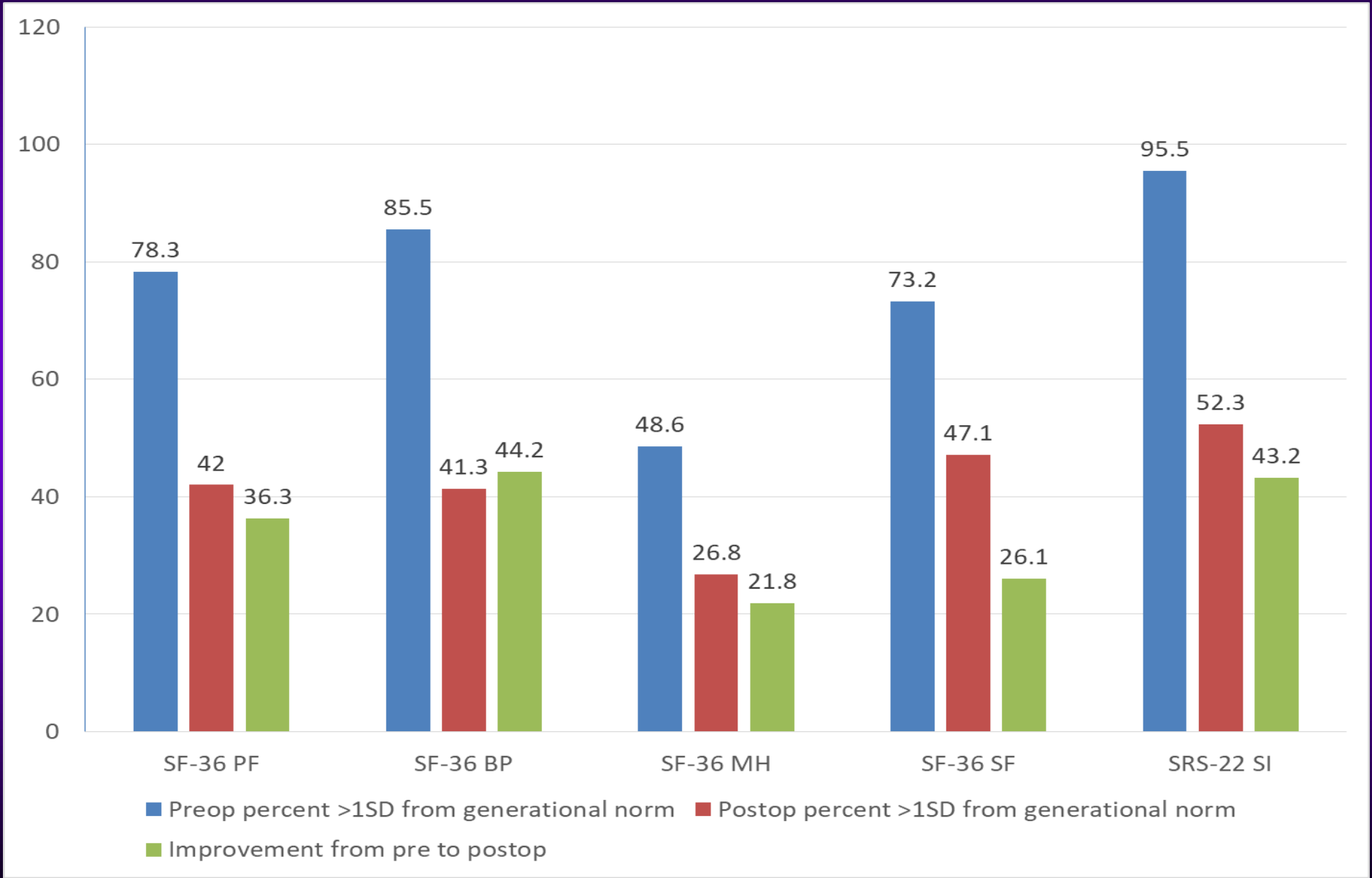
- Mixed ASD
  - Age 63 years
  - ASA grade= 2.5
  - Scoliosis= 48.8°
  - SVA= 103.7mm
- Pain improvement
  - Back= 49%
  - Leg= 48%
- Function improvement
  - Physical= 40%
  - Social= 40%
  - Mental= 22%
- Self-image= 68%





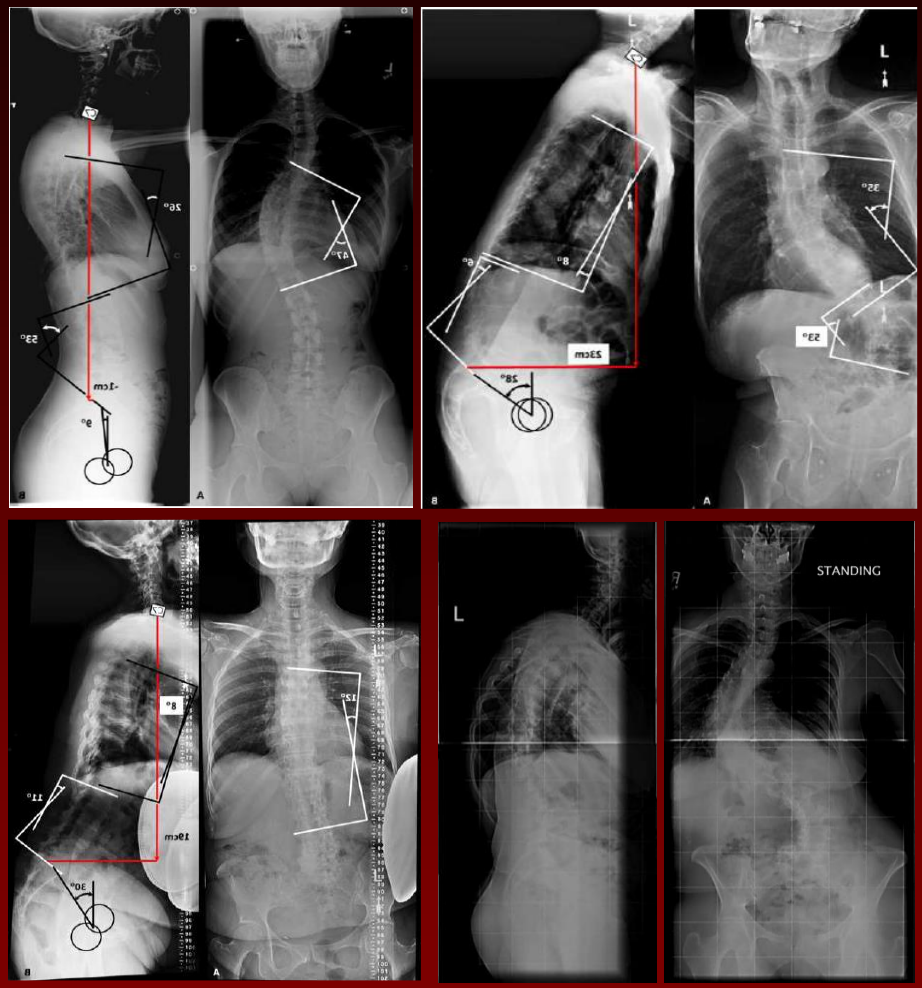
Results: Mixed ASD Generational Norm

Second worst returns to “normal” (behind Sagittal cohort)



Conclusions

- ASD surgery improvements
  - Back pain= 45%
  - Leg pain= 40%
  - Physical function= 30%
  - Social function= 35%
  - Self-image= 60%
  - Will NOT return to “normal”
- Improvements dependent
  - Deformity type
  - PROM domains most impacted
- Effective counseling
  - Measure radiographs
  - Classify deformity type
  - Measure PROMS
- Important implications
  - ASD PROM development
  - ASD outcomes research



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