Comparison of the PROMIS Physical Function CAT with the FFI and FAAM for Foot and Ankle Disorders

Kenneth J. Hunt, M.D.
Stanford University
Department of Orthopaedic Surgery

Co-Investigators
OFAR (Orthopaedic Foot & Ankle Outcomes Research Network)

- Ian Alexander, MD. Cleveland Clinic, Cleveland, OH
- Judith Baumhauer, MD. University of Rochester, NY
- James Brodsky, MD. Baylor/UT Southwestern, Dallas, TX
- Christopher Chiodo, M.D. Brigham and Women’s Hospital, Boston, MA
- Timothy Daniels, MD. University of Toronto, Canada
- W. Hodges Davis, MD. Orthocarolina, Charlotte, NC
- Jon Deland, MD. Hospital for Special Surgery, New York, NY
- Scott Ellis, MD. Hospital for Special Surgery, New York, NY
- Man Hung, PhD. University of Utah, Salt Lake City, UT
- Susan N. Ishikawa, MD. Campbell Clinic, Memphis, TN
- L. Daniel Latt, MD PhD. University of Arizona, Tucson, AZ
- Phinit Phisitkul, MD. University of Iowa, Iowa City, IA
- Nelson Fong SooHoo, MD. UCLA, Los Angeles, CA
- Arthur Yang, MS Stanford University, Redwood City, CA
- Charles L. Saltzman, MD. University of Utah, Salt Lake City, UT

Disclosures

- No disclosures pertinent to this work
- Project funded by AOFAS/OEF

Background

Patient Reported Outcomes

“The NEW ENGLAND JOURNAL of MEDICINE

DECEMBER 23, 2010

What Is Value in Health Care?

Michael E. Porter, Ph.D.

‘Measuring, reporting and comparing outcomes are perhaps the most important steps toward improving outcomes and reducing costs’

Porter ME, NEJM Dec, 2010
Background
Patient Reported Outcomes

- Wide range of clinical outcome measures used in the evaluation of foot and ankle procedures and disorders
- No broadly accepted consensus

Outcomes

Use of Patient-Reported Outcome Measures in Foot and Ankle Research
Kenneth J. Hunt, MD, and Daniil Hurwit, BA

- 10 year review of Foot/Ankle Outcome Metrics
  - 139 unique scales
  - 55 used more than once
  - 28 used 5 times or more
**Background**

Outcomes in Foot and Ankle

- Physical Function CAT
  - Valid and reliable for lower extremity patients
  - Equal or Superior to SF-36 PF
  - Responsiveness not yet determined

1 Hung et al., 2013 FAI
2 Hung et al., 2014 FAI

**Objectives**

The aim of this study was to examine and compare PF CAT to FAAM and FFI

1. Psychometric Properties
   - Validity
   - Reliability
   - Responsiveness

2. Efficiency (i.e., time for completion)

**Methods**

Data Collection

- PRO Data collected through OFAR Network
  - OFAR created in 2012 by AOFAS
  - Facilitate collection of PRO measures
  - Using PROMIS CATs
Methods
Data Collection

• Each of 10 sites:
  – Enrolled patients undergoing surgery for:

  Ankle/Hindfoot
  • Ankle Arthritis
  • Ankle Instability
  • Flatfoot Deformity

  Forefoot
  • Bunions
  • Hammer toe(s)
  • Hallux rigidus

Methods
Data Collection

• Each of 10 sites:
  – Enrolled patients undergoing surgery for:
  – PRO measures collected:

  Legacy Instruments
  • Foot and Ankle Ability Measure (FAAM)
  • Foot Function Index (FFI)

  Computer Adaptive Test
  • Physical Function CAT

Results
Total Enrollment

311 total patients enrolled at 10 sites

<table>
<thead>
<tr>
<th>Trait</th>
<th>Mean (SD)</th>
<th>Min</th>
<th>Max</th>
<th>p (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhematoid Arthritis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Results

#### Total Enrollment

311 total patients enrolled at 10 sites

56% completed 6 month follow-up surveys

### Psychometric Properties

- **Construct validity:**
  - Rasch model
  - High for all instruments

- **Convergent validity:**
  - Pearson correlation

<table>
<thead>
<tr>
<th></th>
<th>PF CAT</th>
<th>FAAM</th>
<th>FFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF CAT</td>
<td>1.000</td>
<td>0.785</td>
<td>0.792</td>
</tr>
<tr>
<td>FAAM</td>
<td>1.000</td>
<td>0.685</td>
<td>0.85</td>
</tr>
<tr>
<td>FFI</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Reliability:** High for all instruments

<table>
<thead>
<tr>
<th></th>
<th>Person Reliability</th>
<th>Item Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF CAT</td>
<td>0.96</td>
<td>0.99</td>
</tr>
<tr>
<td>FAAM</td>
<td>0.95</td>
<td>0.99</td>
</tr>
<tr>
<td>FFI</td>
<td>0.93</td>
<td>0.99</td>
</tr>
</tbody>
</table>

- **Responsiveness:**

### Physical Function CAT

- Pre-op
- Post-op
Results
Psychometric Properties

• Responsiveness:

FAAM

Foot Function Index

Results
Psychometric Properties

• Responsiveness:

Foot Function Index

Results
Efficiency

Item count (# of questions)

PF CAT 4.3
FAAM 28.0
FFI 23.0

Results
Efficiency

Time to Complete Instrument

PF CAT 0:44
FAAM 3:16
FFI 2:59
**Summary**

- **PROMIS Physical Function CAT**
  - Valid, reliable tool for foot/ankle disorders
  - Responsive to change at 6 months
  - More efficient than FFI and FAAM
    - Fewest items and least time to completion
- **FFI**
  - Less sensitive to change at 6 months compared to FAAM and PF CAT

**Conclusions**

- **PROMIS Physical Function CAT**
  - Increasingly recognized outcomes tool
  - May augment legacy scales
  - Allow orthopaedic subspecialties to “speak the same language” for outcomes assessment

**Conclusions**

- **Our Ultimate Goals:**
  - Enhance our ability to assess patient outcomes
  - Improve quality and generalizability of outcomes research
  - Direct the conversation on quality assessment and appropriate allocation of health care resources

**Thank You**

OFAR Network
AOFAS/OEF