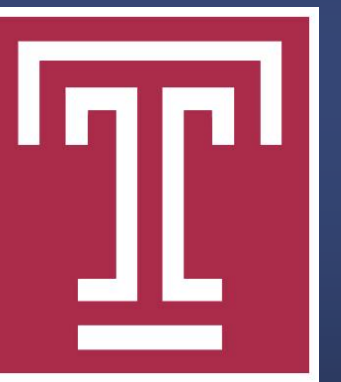
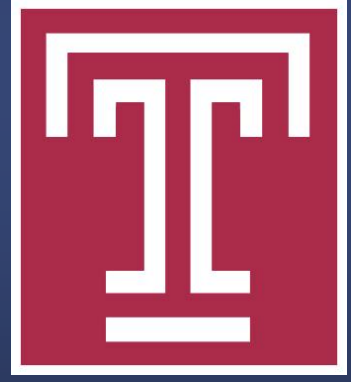


# Accuracy of clinical outcome measures published in *The Journal of Foot and Ankle Surgery*® and the *Journal of the American Podiatric Medical Association*.

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## Statement of Purpose and Literature Review

Our group has previously published a descriptive account of the clinical outcomes measures utilized by authors and published in the peer-reviewed podiatric medical literature [1-3]. We had hoped that these findings might be particularly relevant to physicians in contemporary foot and ankle practice as US health care centers, hospitals and third party payers are working towards value-based and outcome-based reimbursement strategies. This analysis, however, only described the number of original articles that utilized a clinical outcome measure and provided a frequency count list of utilized measures. We had made no attempt to determine the appropriateness and/or accuracy of the use of each measure within the specific study design [4]. This information might help provide a shift toward the consistent use of a smaller number of valid, reliable, and clinically useful scales within the podiatric medical literature.

**Therefore, the objective of this investigation was to further evaluate the clinical outcomes measures published in the podiatric medical literature for their accuracy within the specific study designs.**

## Methodology

All published articles in the *Journal of the American Podiatric Medical Association* and *The Journal of Foot and Ankle Surgery*® over a 5-year retrospective period (01-2011 to 12-2015) were manually reviewed for the use of clinical outcome measures. Inclusion criteria consisted of all original research articles.

We had initially observed a total of 37 unique clinical outcomes scales in 151 original research articles. The present investigation subsequently aimed to determine the appropriateness of the use of these 37 unique outcome scales within the specific investigational designs. To achieve this, we further performed a medical literature search on each of the unique clinical outcome scales to determine 1) if the scale had been previously validated in a published report, and 2) if the scale had been previously utilized in a published report for the specific pathology investigated. We considered a clinical outcome scale to be "valid" if an independent peer-reviewed article had been published quantifying some objective measure of reliability of the scale for any indication. In terms of the specific pathology investigated, we also recorded whether the scale had been previously utilized for any foot/ankle indication.

## Results

Results are displayed in the following tables with provided data interpretation:

**Table 1: Frequency of use of a clinical outcome measure in the podiatric medical literature.**

	Frequency of clinical outcome measure use
1336 total articles published	<b>151 (11.3%)</b>
655 original articles published	<b>151 (23.1%)</b>

From 01-2011 to 12-2015, the *Journal of the American Podiatric Medical Association* and *The Journal of Foot and Ankle Surgery*® published a total of 1336 articles. Of these 1336, 655 (49.0%; 655/1336) were classified as original research. And of these 655, 151 utilized at least one clinical outcome measure. This represented 23.1% (123/655) of all original research articles and 11.3% (151/1336) of all publications.

**Table 2: Most frequency reported clinical outcome measures published in the podiatric medical literature.**

Clinical outcome measure	Frequency count of use (n=151)
American Orthopaedic Foot and Ankle Society (AOFAS) scale	<b>82 (54.3%)</b>
Visual analog scale (VAS)	<b>54 (35.8%)</b>
Subjective and/or original measure of patient satisfaction/expectation	<b>24 (15.9%)</b>
Short Form (SF) survey of the Medical Outcomes Study	<b>16 (10.6%)</b>
Foot Function Index (FFI)	<b>8 (5.3%)</b>

In the 151 original research published articles that utilized a clinical outcome measure, 37 unique scales were observed. The five most frequently reported scales were the American Orthopaedic Foot and Ankle Society (AOFAS) scale, Visual analog scale, a subjective and/or original measure of patient satisfaction/expectation, the Short Form (SF) survey of the Medical Outcomes Study, and the Foot Function Index (FFI).

**Table 3: Evidence of validity for the utilized clinical outcome measures.**

	Any evidence of independent validation	No evidence of independent validation
37 unique clinical outcome measures	<b>17 (45.9%)</b>	<b>20 (54.1%)</b>

Of the 37 unique clinical outcome measures utilized by authors and published in the podiatric medical literature, we observed evidence of independent reliability measurement of 17 measures, or 45.9%.

**Table 4: Utilization of validated clinical outcome measures.**

	Utilized any validated clinical outcome measure	Utilized a validated clinical outcome measure previously published with any foot/ankle pathology	Utilized a validated clinical outcome measure previously published for the specific foot/ankle pathology investigated
151 original research articles published with a clinical outcome measure	<b>138 (91.4%)</b>	<b>110 (72.8%)</b>	<b>20 (13.2%)</b>

Although we observed that a relatively low percentage of the outcome measures were validated (45.9%), most published articles utilized at least one of the validated measures (91.4%). 72.8% of articles utilized a validated measure that had been previously utilized published with any foot/ankle pathology, and 13.2% of articles utilized a validated measure that had been previously published for the specific foot/ankle pathology investigated.

## Discussion

As with any scientific investigation, critical readers are encouraged to review the study design and results and reach their own conclusions, while the following represents our conclusions based on the specific results. As scientists, we also never consider data to be definitive, but do think that these results are worthy of attention and future investigation.

-These results provide further evidence on how validated, reliable, and clinically useful outcome scales might be better utilized within the podiatric medical literature to advance both our profession and foot/ankle surgical science. Although we observed that a relatively wide variety of clinical outcome measures were utilized by authors and published in the podiatric medical literature, those that were utilized most frequently had generally demonstrated evidence of previous independent validation and previous publication for foot/ankle pathology.

-This might also serve as a potential "call to action" for our national organizations and peer-reviewed publications to provide education to members and critical readers with respect to the appropriate use of clinical outcome measures, both within the medical literature and in clinical practice. Perhaps a list of pathology-specific recommended clinical outcome measures could be developed for future investigators. The information provided within the present study might provide a useful starting point for the development of such a list.

## References

- [1] Hasenstein T, Greene T, Meyr AJ. A 5-Year Review of Clinical Outcome Measures Published in the Journal of the American Podiatric Medical Association and the Journal of Foot and Ankle Surgery®. *J Foot Ankle Surg.* 2017;56(3):519-521.
- [2] Hunt KJ, Hurwit D. Use of patient-reported outcome measures in foot and ankle research. *J Bone Joint Surg Am* 95(16): e118(1-9), 2013.
- [3] Sitzia J. How valid and reliable are patient satisfaction data? An analysis of 195 studies. *Int J Qual Health Care.* 1999;11(4):319-28.