The purpose of this study was to report the inter- and intra-rater reliability of radiological measures of foot deformity in subjects with diabetes mellitus (DM), peripheral neuropathy (PN), and foot related complications.

**Purpose**

• Transverse alignment from anterior/posterior radiograph
  - Angle formed by talocalcaneal bisector and 2nd metatarsal shaft (degrees) (Figure A)
• Sagittal alignment from lateral radiograph
  - Meary’s angle (degrees), Calcaneal Pitch (degrees), Cuboid height (mm) (Figure B)
• Raters: 1) Fellowship Trained Orthopaedic Foot and Ankle Surgeon (23 yrs experience), 2) Fellowship Trained Orthopaedic Foot and Ankle Surgeon (2 yrs experience), 3) Diagnostic Radiology Resident (PGY 3)
• Rater 1 repeated measurements twice. Raters 2 and 3 repeated measurements once
• Root Mean Square Standard Deviation (RMS SD) was calculated to determine the average measurement error
• Least Significant Change of the RMS SD (LSC) was calculated to determine the smallest change that is considered a biologically real change, with 95% confidence

**Subjects**

• 15 subjects with DM, PN and foot related complications
  - 6 men, 9 women, age 51 ± 9 years
  - Body mass index 34 ± 5 kg/m²
  - Duration of DM 17 ± 9 years

**Methods**

• Transverse plane, calcaneal pitch, and cuboid height alignment measures can be completed with excellent reliability within and between raters. Meary’s angle is a challenging measure to make.
• The LSC values indicate that small changes in angular and distance measures on radiographs are important and require close attention.
• The ability to reliably measure foot alignment in a sample with DM, PN, and foot deformity will provide a needed tool to detect, monitor and prevent foot deformity progression and evaluate the effectiveness of intervention.

**Radiological Methods**

Figure A: Anterior/Posterior Measure of Talocalcaneal bisector and 2nd metatarsal shaft. B. Lateral measures of Meary’s Line, Calcaneal Pitch, and Cuboid Height

**Conclusions**

• Transverse plane, calcaneal pitch, and cuboid height alignment measures can be completed with excellent reliability within and between raters. Meary’s angle is a challenging measure to make.
• The LSC values indicate that small changes in angular and distance measures on radiographs are important and require close attention.

**Clinical Relevance**

• The ability to reliably measure foot alignment in a sample with DM, PN, and foot deformity will provide a needed tool to detect, monitor and prevent foot deformity progression and evaluate the effectiveness of intervention.