Experts’ foot labels and measured values: their relation

The assessment of feet by foot experts depends on their background knowledge and preferences. To streamline foot assessments we want to pinpoint measurable values to each foot characteristic. First we link the expert scores to measured features, looking at the correlation. Afterwards, we assign exact values to each foot characteristic based on the measurements.

**WHICH SUBJECTS PARTICIPATED**

- 37 subjects without foot deformities
- all 10 experts assessed all subjects

**THE AVERAGE EXPERT SCORE**

The experts fill in a form with 65 multiple choice questions, e.g. the longitudinal foot arch.

**CORRELATION LONGITUDINAL ARCH**

- one example of 65 characteristics
- navicular height (mm)
- angle between MT2 and the ground (°)
- midfoot area (cm²)
- ratio lateral/medial heel area

- good
- correlation values
- bad

**MEASUREMENT EQUIPMENT**

- 3D marker registration
- pressure plate
- 3D scanner
- force plate
- 304 quantitative features

**WHICH EXACT VALUES**

- navicular height (static half weight)
- low arch: 32.2 mm
- normal: 37.6 mm
- high arch: 46.4 mm

- angle between MT2 and the ground
- low arch: 26.8°
- normal: 29.0°
- high arch: 32.0°

- midfoot area
- low arch: 24.2 cm²
- normal: 17.3 cm²
- high arch: 12.6 cm²

**DISCUSSION**

We only get relevant values for the different classifications of the foot characteristics (e.g. low arch, normal arch, high arch) if there is a significant correlation. When there is no significant correlation, no trend is observed in the exact values. Note that we only investigate the linear correlation, so no non-linear correlations will be found.