

Comparison of biomechanical foot analyses between nine Flemish foot-experts

INTRODUCTION

It is well known that there is no standardization yet of clinical methods to analyze foot biomechanics. In Flanders, foot analyses can be performed by medical doctors, orthopedic technologists and podiatrists. The purpose of this study was to investigate to what extent foot experts in Flanders differ in biomechanical foot analyses.



METHODS

3 podiatrists, 5 orthopedic technologists and 1 foot surgeon performed a biomechanical analysis of the left foot of 78 healthy adult subjects. There were 40 male and 38 female subjects, average age 33 (range 19 – 61). The tools used were different for all experts, for example:

- Podoscope
- Goniometer
- Instrumented treadmill
- Plantar pressure measurement device

All experts used the techniques they normally use in clinical practice and took between 5 and 25 minutes per subject.

The results of the analyses were filled in on a specially developed form, containing 47 multiple choice questions:

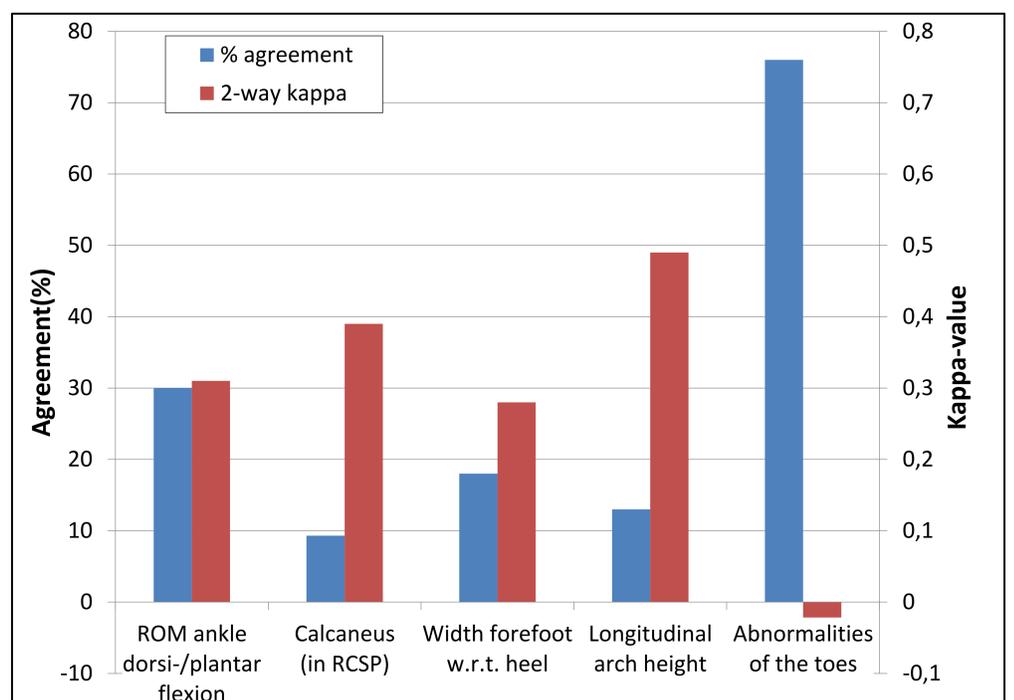
- 13 on mobility parameters
- 16 on static parameters
- 18 on dynamic parameters

Experts were free to choose which questions to fill in.

Agreement (%) as well as 2-way-kappa statistics were used to calculate agreement between experts for each feature.

Example of the assessment form

ROM ankle dorsi-/plantar flexion	<input type="checkbox"/> Flexible	<input type="checkbox"/> Limited	<input type="checkbox"/> Normal
Calcaneus (in RCSP)	<input type="checkbox"/> Varus	<input type="checkbox"/> Valgus	<input type="checkbox"/> Normal
Width forefoot w.r.t. heel	<input type="checkbox"/> Wide	<input type="checkbox"/> Narrow	<input type="checkbox"/> Normal
Longitudinal arch	<input type="checkbox"/> High	<input type="checkbox"/> Low	<input type="checkbox"/> Normal
Position forefoot	<input type="checkbox"/> Abduction	<input type="checkbox"/> Adduction	<input type="checkbox"/> Normal



RESULTS

Large differences were seen between different features. Some were not analyzed by enough experts to calculate kappa. Others were filled in by many, but agreement was low. Example of agreement (%) and 2-way kappa are shown in the figure above.

The highest kappa was found for the assessment of the height of the longitudinal arch, with 0,49. This feature was assessed by all 9 experts.

The highest value of relative agreement was found for 'abnormalities of the toes', with 76%, assessed by all 9 experts.

CONCLUSION

The feet of 78 subjects were analyzed by 9 different foot experts. Agreement between experts was highly variable for different features. Further statistical analysis of the data will give insight into which features of the foot are most reliable.

