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Normative data of the Visual Analogue Scale Foot and Ankle (VAS FA) for pathological conditions

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ABSTRACT

Background: The purpose of this study was to analyze the Visual Analogue Scale Foot and Ankle (VAS FA) in patients to obtain normative data for pathological conditions.
Methods: The VAS FA was consecutively obtained in a foot and ankle outpatient clinic. The score results were categorized into different pathological foot and ankle conditions.
Results: 414 patients were evaluated. Overall scores and score categories of all pathology groups differed from non-pathological data ($n = 121$). Within the different groups, no score differences occurred. Score standards were defined for these groups with sufficient statistical power (>.8): isolated Hallux valgus, Hallux valgus and claw toes, forefoot other pathology, midfoot other pathology, hindfoot pathology and ankle deformity. No standards were defined for other pathology groups.
Conclusions: The obtained data is normative for different pathological conditions of the earlier validated VAS FA. The obtained data is normative for different pathological conditions of the earlier validated VAS FA. This data could serve as a basis for assessment patient scoring before, during and after treatment which has to then to be proved by ongoing research.

1. Introduction

The Visual Analogue Scale Foot and Ankle Surgery (VAS FA) has recently been validated on healthy subjects [1]. However, normative data of the validated VAS FA for *pathological* conditions have been missing so far [2–6]. The only validated score for *different pathological* conditions is the Short Form 36 (SF 36) which is not foot and ankle specific [7,8]. As far as we know, specific data for *different* foot and ankle pathologies have not been defined with any scoring system so far despite several efforts [5,6,9–11]. The purpose of this study was to analyze the VAS FA in patients to obtain normative validated foot and ankle specific data for pathologic conditions. This data may serve as a basis for more specific assessment than with the SF36. We hypothesized that different pathological foot and ankle conditions show different scores and score categories.

2. Methods

The VAS FA was obtained consecutively from patients of a foot and ankle outpatient clinic. The score results were categorized into different pathologic foot and ankle conditions and further analyzed (see below).

2.1. Visual Analogue Scale Foot and Ankle (VAS FA) [1]

The Visual Analogue Scale Foot and Ankle with the following features was used: a questionnaire based on 20 questions requiring purely subjective answers; three different question categories (pain, $n = 4$ questions; function, $n = 11$; other complaints $n = 5$); Visual Analogue Scale (VAS) based rating; computerized evaluation. For each question a VAS-value from 0 to 100 points is possible. The total value for the entire score (all 20 questions answered) is therefore 0–2000 points. This total value is then divided by 20, resulting in a possible total score ranging from 0 to 100 points. To obtain the result from the single categories the total values from the category questions are divided by the number of questions (function, 11; pain, 4; other complaints, 5). The different number of questions for the categories was determined to consider function, pain and other complaints with various importances. Since more questions are included for function ($n = 11$) than for pain ($n = 4$) and other complaints ($n = 5$), function is weighed higher for the final score than pain or other complaints.

In case of missing answers, the results of the entire score or the categories can still be obtained by dividing the total point value by the number of remaining questions. Whether, for example, one question is missing in each category (pain, function, other

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complaints), the total value of the 17 remaining questions (ranging from 0 to 1700 points) is divided by 17 to obtain the entire score. For the categories (pain, function, other complaints), the total category values of the remaining 3/10/4 questions is divided by 3/10/4 to obtain the score category results.

The German score version was used for this study.

The score was evaluated by hand and computerized. The method by hand was performed with a transparent template that was placed on the score form and allowed a reading of the point values of the single questions. The values were then entered into a personal computer using a spreadsheet based (Excel™, Microsoft Inc.) result-calculation instrument which enabled a calculation of the entire score result and the category results.

2.2. Inclusion criteria

All patients from a foot and ankle outpatient clinic irrespective their diagnosis and their treatment between September 1, 2006 and August 31, 2009 were included.

2.3. Exclusion criteria

Patients without pathological foot and/or ankle condition were excluded. Patients with missing answers were excluded from the further evaluation.

2.4. Study protocol

After the patient had arrived at the foot and ankle clinic, a secretary handed over the VAS FA. The patient completed the form in the waiting area. The sheets were then collected by the secretary after the assessment by the foot and ankle surgeons (JS, SZ, MR). The analysis of the scores including the different score categories were performed with the described computerized method by one of the authors (JS). Under consideration of the earlier approved intra- and interobserver reliability, only one investigator analyzed the scores [1].

2.5. Grouping

The patients were grouped as follows:

- forefoot/isolated Hallux valgus,
- forefoot Hallux valgus and claw toes,
- forefoot others,
- midfoot deformity,
- midfoot others,
- hindfoot varus deformity,
- hindfoot valgus deformity,
- hindfoot others,
- ankle deformity,
- ankle instability,
- flatfoot,
- cavus foot,
- other pathology.

The grouping was performed by the foot and ankle surgeons (JS, SZ, MR) who assessed the patients in the foot and ankle clinic. One single surgeon defined the grouping for each patient. The inter- or intraobserver reliability of the grouping was not analyzed. 121 subjects from an earlier study without pathology served as control group [1].

2.6. Statistical analysis

The VAS FA and demographic data were analyzed and compared between groups (One-way ANOVA and Post Hoc Scheffe test). Before the ANOVA test, the distribution of the data was checked and normal distribution for all tested groups was confirmed. The definition of a standard was considered to be possible if no statistical differences within one group was found (one sample *t*-test with confidence interval 95% and the average value as test value, $p > 0.05$), *and* if the power of this special analysis was adequate (>0.8). The score standard was defined as the range between mean value minus standard deviation and mean value plus standard deviation. This range could not exceed 100 points by definition.

3. Results

422 patients were initially included. In 8 cases (2%), less than 20 questions were answered, and these patients were excluded from the further evaluation. The FAS FA was completely answered in 414 cases (98.1%). In 20 of those cases (4.8%), words were additionally written on the VAS FA sheet, and these words were ignored for the further evaluation.

The mean age of the 414 further evaluated cases was 51.6 years (±15.6), 147 (35.5%) were male and 267 (64.5%) were female. The average scores of the entire group were as follows: overall 55.0 (±21.6), pain 45.5 (±25.9), function 56.9 (±24.6) and other complaints 58.9 (±23.7).

3.1. Groups

The patients were grouped as follows: isolated Hallux valgus, $n = 80$ (19.3%); Hallux valgus with claw toes, $n = 46$ (11.1%); forefoot others, $n = 58$ (14.0%); midfoot deformity, $n = 9$ (2.2%); midfoot others, $n = 42$ (10.1%); hindfoot others, $n = 54$ (13.0%); ankle deformity, $n = 68$ (16.4%); ankle instability, $n = 8$ (1.9%); flatfoot, $n = 11$ (2.7%); cavus foot, $n = 15$ (3.6%), other pathology, $n = 23$ (5.6%). The control group comprised 121 cases (mean age, 31.4 years (±10.4), 63 (52.1%) were male, 58 (47.9%) were female). No patients were assigned to groups hindfoot varus or hindfoot valgus. Table 1 shows score results of the different groups, and Fig. 1a–d boxplots of the scores of the different groups.

3.2. Statistical analysis

3.2.1. Demographic data

Age and gender differed between groups overall (One-way ANOVA each $p < .001$). The Post Hoc Scheffe test showed age differences between the control group and all pathology groups (each $p < .05$) except ankle instability, flatfoot and cavus foot but no age differences between pathology groups. The Post Hoc Scheffe test showed gender differences between all groups (each $p < .05$).

3.2.2. Scores

The scores and score categories differed between all groups (One-way ANOVA each $p < .001$). Table 2 shows the results of the Post Hoc Scheffe test of the score differences. Overall scores, pain and function categories differed between control group and all pathology groups (each $p < .05$). Other complaints category did not differ between control group and all pathology groups except ankle deformity, flatfoot, cavus foot and other pathology (each $p \geq .05$). The overall scores and all score categories did not differ between different pathology groups (each $p \geq .05$).

When grouping groups into forefoot (groups isolated Hallux valgus, Hallux valgus with claw toes, forefoot others, $n = 184$), midfoot (groups midfoot deformity, midfoot others, $n = 51$), ankle/hindfoot (groups hindfoot others, ankle deformity, ankle instability, $n = 130$) and other pathology (groups flatfoot, cavus foot, other pathology, $n = 49$), the scores and score categories differed between all groups (One-way ANOVA each $p < .001$). The Post Hoc Scheffe test of the score differences showed differences

Table 1
VAS FA for different pathology groups and control group, and defined standards. * No standard definition because power of statistical analysis <.8 [1].

Pathology	Score category	Minimum	Maximum	Mean	Standard deviation	Defined standard
No pathology (Control group) $n=121$	Overall score	45.7	100.0	94.5	8.2	86.3–100
	Pain	46.0	100.0	92.5	10.1	82.4–100
	Function	33.1	100.0	95.4	8.8	86.5–100
	Other complaints	35.4	80.0	75.6	7.4	68.2–83.0
Isolated Hallux valgus $n=80$	Overall score	20.7	99.0	64.0	18.9	45.0–82.9
	Pain	0	99.8	51.8	25.1	26.7–76.9
	Function	14.0	100.0	67.8	21.2	46.6–89.0
	Other complaints	9.0	100.0	65.7	19.7	46.1–85.4
Hallux valgus and claw toes $n=46$	Overall score	3.8	97.1	57.6	23.8	33.9–81.4
	Pain	0	100.0	46.7	25.9	20.8–72.6
	Function	3.0	100.0	60.4	26.4	33.9–86.8
	Other complaints	4.0	94.8	59.5	24.5	35.0–84.0
Forefoot other pathology $n=58$	Overall score	0	96.1	59.9	20.7	39.2–80.6
	Pain	0	100.0	53.3	24.7	28.6–78.1
	Function	0	99.2	61.4	23.6	37.9–85.0
	Other complaints	0	100.0	62.2	21.0	41.2–83.2
Midfoot deformity $n=9$	Overall score	0	93.3	53.3	26.4	*
	Pain	0	99.5	52.9	34.4	
	Function	0	100.0	57.1	32.8	
	Other complaints	0	83.0	46.8	28.3	
Midfoot other pathology $n=42$	Overall score	12.4	96.5	53.8	21.5	32.3–75.4
	Pain	0	100.0	40.4	25.8	14.7–66.2
	Function	7.0	100.0	56.1	26.4	29.8–82.5
	Other complaints	14.8	100.0	61.6	22.0	39.5–83.6
Hindfoot other pathology $n=54$	Overall score	13.3	97.8	52.6	17.9	34.7–70.5
	Pain	0	97.8	41.0	23.1	17.9–64.1
	Function	9.6	97.3	53.1	20.4	32.6–73.5
	Other complaints	19.8	100.0	61.5	21.0	40.5–82.5
Ankle deformity $n=68$	Overall score	7.5	100.0	49.0	21.9	27.1–70.9
	Pain	2.3	100.0	42.3	25.7	16.7–68.0
	Function	6.7	100.0	49.2	23.6	25.6–72.9
	Other complaints	0	100.0	55.0	24.9	30.0–79.9
Ankle instability $n=8$	Overall score	22.5	79.1	48.1	20.9	*
	Pain	19.5	81.8	42.7	24.1	
	Function	22.4	73.0	45.6	19.1	
	Other complaints	0	100.0	54.9	32.9	
Flatfoot $n=11$	Overall score	22.1	76.2	40.8	17.8	*
	Pain	2.5	62.0	26.9	21.9	
	Function	21.7	74.1	44.2	17.3	
	Other complaints	2.7	92.0	43.2	28.2	
Cavus foot $n=15$	Overall score	15.2	75.9	45.9	19.1	*
	Pain	9.3	71.3	33.9	19.7	
	Function	3.8	85.5	51.1	23.7	
	Other complaints	9.0	68.6	42.4	18.9	
Other pathology $n=23$	Overall score	11.8	100.0	47.3	25.3	*
	Pain	0	100.0	44.4	32.1	
	Function	5.6	100.0	47.0	29.9	
	Other complaints	9.2	100.0	51.3	24.8	

between pathology groups, for example forefoot ankle/hindfoot regarding overall score, and categories pain and function (Table 3).

Within the different groups, no score differences (overall score or score categories) occurred (one sample *t*-test with confidence interval 95% and the average value as test value, each $p \geq .05$). The power of this analysis was >.8 for the 7 groups no pathology (control group), isolated Hallux valgus, Hallux valgus and claw toes, forefoot other pathology, midfoot other pathology, hindfoot pathology and ankle deformity. Score standards were defined for these groups (Table 1).

4. Discussion

American Orthopaedic Foot and Ankle Society (*AOFAS*) score is the mostly used score for foot and ankle shown by the high number of hits when entering the term "aofas score" into the PubMed®-search engine in the World-Wide-Web (National Library of Medicine) [1,2,4,6,9,12,13]. However, this score is problematic due to significant flaws as follows. The score is not validated despite several attempts [2,6,9,14], cannot be obtained if answers are missing, and contains problematic pseudo-objective assessment [1]. To assess a walking distance in blocks, to specify joint stability as "stable" or "definitely instable", to define gait abnormality as "none, slight", "obvious" or "marked", or to classify alignment as "good, plantigrade, well aligned", "fair, plantigrade, some degree of. . .malalignment" or "poor, nonplantigrade, severe malalignment" are some examples for non- or pseudo-objective assessment of the AOFAS-score [1].

The Ankle Osteoarthritis Score (*AOS*) is an instrument that was developed for the assessment of pain in patients with ankle

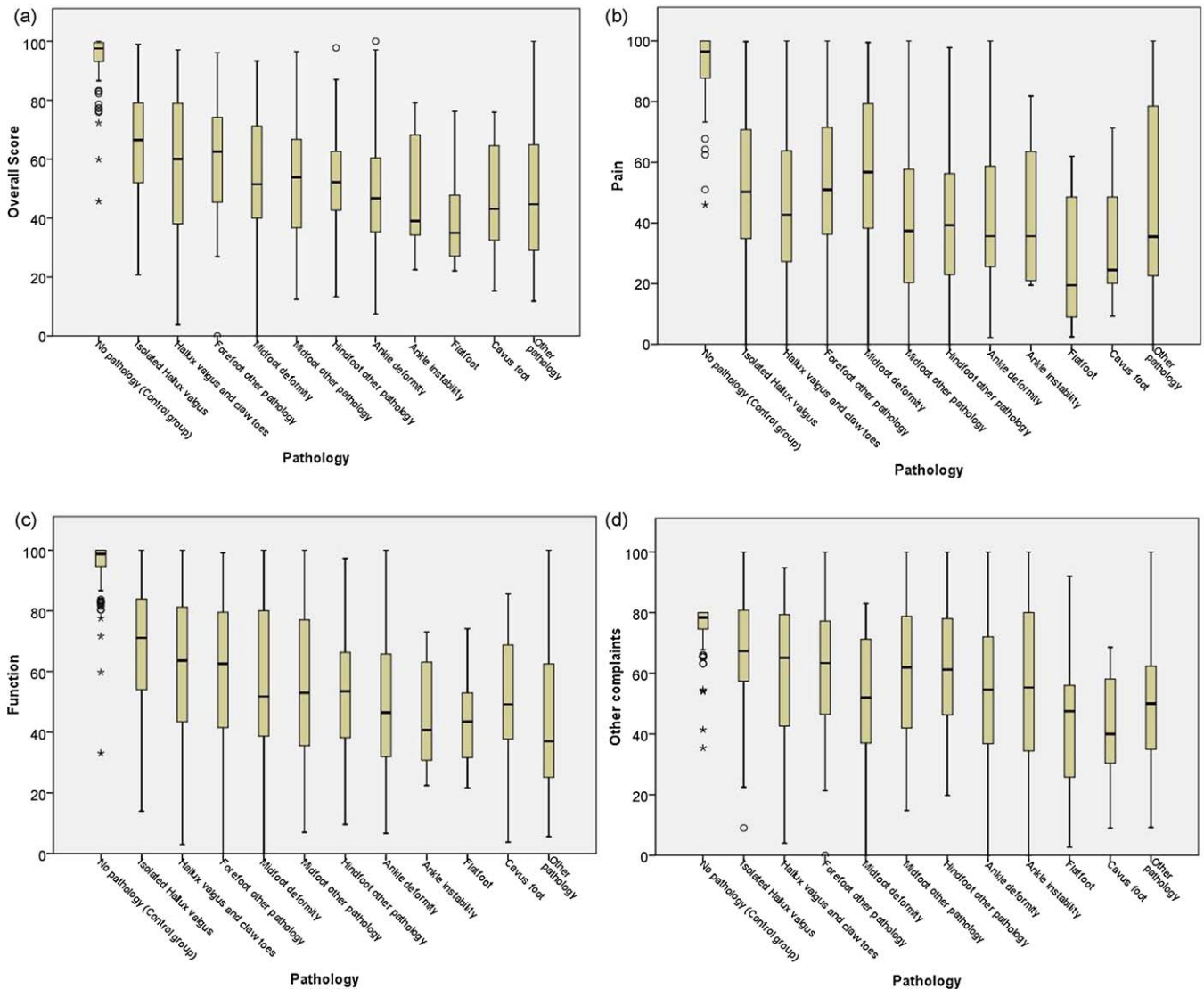

Fig. 1. (a–d) Boxplots of scores and score categories of different groups (a, overall; b, pain; c, function; d, other complaints).

osteoarthritis [15,16]. The score demonstrated a high "vulnerability" regarding other musculoskeletal problems than at the ankle resulting in a questionable specificity for foot and ankle disorders [1,15].

The Foot Function Index (*FFI*) was correlated with the SF36 for validation [10,17–19]. The correlation coefficients ranged from 0.10 to −0.69 for the different domains disability (0.23 to −0.69), activity limitation (−0.26 to −0.64) and pain (−0.10 to −0.61) [17]. Despite the conclusions of SooHoo et al. that these levels of correlation support the FFI as a valid measure, it is clear that a correlation coefficient smaller than 0.5 (or greater than −0.5 for negative correlation) does not represent a sufficient correlation allowing a successful validation [1,10,17,20].

The validation process of the Foot and Ankle Outcome Score (*FAOS*) was reported by Roos et al. [11]. The FAOS is an adaptation of the Knee Injury and Osteoarthritis Outcome Score intended to

Table 2
Result of Post Hoc Scheffe test from One-way ANOVA of scores ($p < .001$) of different single groups. All lines with only non-significant values not shown (complete table in Appendix B).

Test group 1	Test group 2	Overall	Pain	Function	Other
No pathology (Control group) $n = 121$	Isolated Hallux valgus	<.001	<.001	<.001	.406
	Hallux valgus and claw toes	<.001	<.001	<.001	.035
	Forefoot other pathology	<.001	<.001	<.001	.108
	Midfoot deformity	<.001	.010	.005	.113
	Midfoot other pathology	<.001	<.001	<.001	.186
	Hindfoot other pathology	<.001	<.001	<.001	.080
	Ankle deformity	<.001	<.001	<.001	<.001
	Ankle instability	<.001	<.001	<.001	.727
	Flatfoot	<.001	<.001	<.001	.008
	Cavus foot	<.001	<.001	<.001	<.001
	Other pathology	<.001	<.001	<.001	.004
Isolated Hallux valgus $n = 80$	Ankle deformity	.017	.851	.004	.495

Table 3
Result of Post Hoc Scheffe test from One-way ANOVA of scores ($p < .001$) of groups forefoot (isolated Hallux valgus, Hallux valgus with claw toes, forefoot others, $n = 184$), midfoot (midfoot deformity, midfoot others, $n = 51$), ankle/hindfoot (hindfoot others, ankle deformity, ankle instability,$n = 130$) and other pathology (flatfoot, cavus foot, other pathology, $n = 49$).

Test group 1	Test group 2	Overall	Pain	Function	Other
No pathology (Control group), $n = 121$	Forefoot	<.001	<.001	<.001	<.001
	Midfoot	<.001	<.001	<.001	<.001
	Ankle/Hindfoot	<.001	<.001	<.001	<.001
	Other pathology	<.001	<.001	<.001	<.001
Forefoot, $n = 184$	Midfoot	.193	.255	.276	.805
	Ankle/Hindfoot	<.001	.016	<.001	.251
	Other pathology	<.001	.008	<.001	<.001
Midfoot, $n = 51$	Ankle/Hindfoot	.887	1	.621	.997
	Other pathology	.295	.850	.388	.062
Ankle/Hindfoot, $n = 130$	Other pathology	.636	.845	.953	.037

evaluate symptoms and functional limitations related to the foot and ankle [11]. The FAOS was tested in 213 subjects for follow-up of ankle ligament reconstruction. Factors such as content validity, dimensionality, construct validity, score distribution, internal consistency and test retest reliability were analyzed and correct validation was concluded [11]. The described validation process is sound but only one specific pathology and no control groups were assessed. This calls into question if the FAOS may be valid for other foot and ankle pathologies.

A literature search revealed no publications dealing with validation of a foot and ankle specific score. Consequently, no validated data is available for pathological conditions also. The goal of our study was to use the previously validated foot and ankle specific VAS FA for assessment of a sufficient number of patients to define standards for different pathological conditions.

4.1. Findings

The scores and score categories differed when comparing all groups including the control group. The scores and score categories differed between the control group and all different pathologies except the category other complaints, i.e. the category other complaints was normal or healthy or physiologic. The overall scores and all score categories did not differ between different pathology groups. Thus the different pathologies do not show different scores or score patterns as initially suspected. However, when pooling some of the groups into forefoot (groups isolated Hallux valgus, Hallux valgus with claw toes, forefoot others), midfoot (groups midfoot deformity, midfoot others), ankle/hindfoot (groups hindfoot others, ankle deformity, ankle instability) and other pathology (groups flatfoot, cavus foot, other pathology), the Post Hoc Scheffe test of the score differences showed differences between pathology groups, for example forefoot versus ankle/hindfoot regarding overall score, and categories pain and function. This effect is probably caused by the higher case numbers in each group and the lower number of groups and not by greater differences between the groups. However, based on the overlapping of the scores for the different pathologies without pooling groups together, we put more focus on the definition of standards instead a detection of specific pathologies by the specific score pattern as initially intended. One of the tasks of this study that could be completed successfully was to define standards for different pathologies. Within the different groups, no score differences (overall score or score categories) occurred and the power of this analysis was sufficient for 6 groups (isolated Hallux valgus, Hallux valgus and claw toes, forefoot other pathology, midfoot other pathology, hindfoot pathology and ankle deformity). Consequently, score standards were defined for these groups as the range between mean value minus standard deviation and mean value plus standard deviation. This range could not exceed 100 points by definition of course. This definition had been performed by subjective intention. We choose the range of ±one standard deviation which includes 68.3% of all individuals and we found that this would be a sufficient range for a standard. Another possibility would be a range of ±two standard deviations which includes 95.4% of all individuals. We found that a range of more than 95% would include almost everyone or in other words too many subjects that are not standard. But again, this determination was subjectively and not based on statistical calculations. Within the current step for validation, subjects with missing answers were excluded from the evaluation as done before for the healthy subjects [1]. The score allows the calculation of the total and categories results with missing answers as described above. It was our strategy for validation to validate the score without missing answers for healthy subject and pathological situations first, and later with missing answers.

4.2. Weaknesses

We are aware of some weaknesses of the study such as potential problematic grouping and complex statistical analysis. The grouping was performed by the surgeons from the foot and ankle outpatient clinic. This grouping was based on the clinical assessment, radiographic findings and pedographic measurements. However, this grouping process was not clearly objective but also subjective. Consequently, the entire analysis is based on partly subjective assessment. However, the same partly subjective assessment is also the basis for foot and ankle surgery in general. No patients were assigned to groups hindfoot varus or hindfoot valgus. This was initially surprising because these groups were defined on the basis of subjective experience when thinking of the cohort of patients that would be available for inclusion. However, all patients with hindfoot varus or valgus ($n = 38$) showed also an equinus-like deformity at the ankle which resulted in assignment to the group hindfoot other pathology and not to the groups with isolated hindfoot varus or valgus.

Another potential weakness is the complex statistical analysis. Our goal was to define specific overall score patterns and specific score category patterns for each pathology group, i.e. a standard score points pattern. We could not define this specific pattern but could compare the scores and score categories between groups. The problem in using a One-way ANOVA analysis when comparing different groups is that differences could be over estimated when not also using a Post Hoc test. The same is true for our analysis with very low p-values for the One-way ANOVA test and much higher or even non-significant p-values for the Post Hoc test.

Another shortcoming is the control group. Age and gender differed between most of the pathology groups and between the

pathology groups and the control group. When strictly respecting the principle of a control group, a matched and different control group for all different pathology groups would have been needed. We are aware of this requirement. Still, we defined only one single control group with healthy feet for all comparisons because of the feasibility of this approach and the extreme and unfeasible effort of having matched control groups for all different pathology groups. In the literature this principle is followed with few exceptions when assessing different pathological conditions. In conclusion, we found that for our purpose one control group for all different pathology groups would be sufficient despite the age and gender differences between some groups.

In conclusion, the overall scores and score categories scores differed between the control group and all different pathologies except the category other complaints. The overall scores and all score categories scores did not differ between different pathology groups. Thus the different pathologies do not show different overall scores or category score patterns as initially suspected. The obtained data is normative for different pathologic conditions of the earlier validated VAS FA. This data could serve as a basis for assessment patient scoring before, during and after treatment which has to then to be proved by ongoing research.

Acknowledgement

The authors thank Birgitt Wiese, PhD (Institute for Biometry, Hannover Medical School, Hannover, Germany) for her help and support in carrying out the extensive statistical analysis.

Appendix A. VAS FA for different pathology groups and control group[1], and defined standards

Links for download.

Instruction:

German version	http://www.foot-trauma.org/de/vasd.htm
English version	http://www.foot-trauma.org/uk/vase.htm

Score form:

German version	http://www.foot-trauma.org/dokumente/vasfad.pdf
English version (DIN-A4-format)	http://www.foot-trauma.org/dokumente/vasfaea4.pdf
English version (letter format)	http://www.foot-trauma.org/dokumente/vasfael.pdf

Template/Gauche for evaluation by hand:

German version	http://www.foot-trauma.org/dokumente/messd.pdf
English version (DIN-A4-format)	http://www.foot-trauma.org/dokumente/messea4.pdf
English version (letter format)	http://www.foot-trauma.org/dokumente/messel.pdf

Result-Calculation Instrument for evaluation by hand:

German version	http://www.foot-trauma.org/dokumente/xvasfad.xls
English version	http://www.foot-trauma.org/dokumente/xvasfae.xls

Appendix B. Result of Post Hoc Scheffe test from One-way ANOVA ($p < .001$)

Test group 1	Test group 2	Overall	Pain	Function	Other
No pathology (Control group) $n = 121$	Isolated Hallux valgus	<.001	<.001	<.001	.406
	Hallux valgus and claw toes	<.001	<.001	<.001	.035
	Forefoot other pathology	<.001	<.001	<.001	.108
	Midfoot deformity	<.001	.010	.005	.113
	Midfoot other pathology	<.001	<.001	<.001	.186
	Hindfoot other pathology	<.001	<.001	<.001	.080
	Ankle deformity	<.001	<.001	<.001	<.001
	Ankle instability	<.001	<.001	<.001	.727
	Flatfoot	<.001	<.001	<.001	.008
	Cavus foot	<.001	<.001	<.001	<.001
	Other pathology	<.001	<.001	<.001	.004
Isolated Hallux valgus $n = 80$	Hallux valgus and claw toes	.985	1	.980	.993
	Forefoot other pathology	1	1	.990	1
	Midfoot deformity	.995	1	.998	.793
	Midfoot other pathology	.716	.812	.689	1
	Hindfoot other pathology	.388	.781	.165	1
	Ankle deformity	.017	.851	.004	.495
	Ankle instability	.921	1	.719	.998
	Flatfoot	.203	.404	.376	.370
	Cavus foot	.397	.735	.730	.116
	Other pathology	.232	.999	.111	.611
Hallux valgus and claw toes $n = 46$	Forefoot other pathology	1	.998	1	1
	Midfoot deformity	1	1	1	.991
	Midfoot other pathology	1	.999	1	1
	Hindfoot other pathology	.999	1	.992	1
	Ankle deformity	.885	1	.758	1
	Ankle instability	.999	1	.986	1
	Flatfoot	.790	.822	.925	.889
	Cavus foot	.957	.981	.998	.702
	Other pathology	.946	1	.872	.995

Appendix B (*Continued*)

Test group 1	Test group 2	Overall	Pain	Function	Other
Forefoot other pathology $n = 58$	Midfoot deformity	1	1	1	.952
	Midfoot other pathology	.995	.734	1	1
	Hindfoot other pathology	.962	.701	.959	1
	Ankle deformity	.476	.779	.509	.968
	Ankle instability	.993	1	.973	1
	Flatfoot	.571	.338	.870	.699
	Cavus foot	.830	.658	.993	.405
	Other pathology	.759	.996	.755	.938
Midfoot deformity $n = 9$	Midfoot other pathology	1	.998	1	.971
	Hindfoot other pathology	1	.998	1	.968
	Ankle deformity	1	.999	1	1
	Ankle instability	1	1	1	1
	Flatfoot	.998	.843	.999	1
	Cavus foot	1	.973	1	1
	Other pathology	1	1	1	1
Midfoot other pathology $n = 42$	Hindfoot other pathology	1	1	1	1
	Ankle deformity	.999	1	.994	.993
	Ankle instability	1	1	.999	1
	Flatfoot	.963	.990	.994	.785
	Cavus foot	.999	1	1	.535
	Other pathology	.999	1	.994	.974
Hindfoot other pathology $n = 54$	Ankle deformity	1	1	1	.989
	Ankle instability	1	1	1	1
	Flatfoot	.980	.982	1	.763
	Cavus foot	1	1	1	.490
	Other pathology	1	1	1	.966
Ankle deformity $n = 68$	Ankle instability	1	1	1	1
	Flatfoot	.999	.958	1	.988
	Cavus foot	1	.999	1	.941
	Other pathology	1	1	1	1
Ankle instability $n = 8$	Flatfoot	1	.997	1	1
	Cavus foot	1	1	1	.998
	Other pathology	1	1	1	1
Flatfoot $n = 11$	Cavus foot	1	1	1	1
	Other pathology	1	.956	1	1
Cavus foot, $n = 15$	Other pathology	1	.999	1	.999

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