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1 **Reliability and validity of the Finnish version of the Visual Analogue Scale Foot**
2 **and Ankle (VAS-FA)**

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23

24 **Highlights**

25 * Assessing patient-centered outcomes is essential to capture treatment effectiveness

26 * No validated foot and ankle-specific PROM has been available in Finnish

27 * The VAS-FA was translated and adapted into Finnish

28 * Validity and reliability of the Finnish version of the VAS-FA was good

29

30 **ABSTRACT**

31 *Background:* There have previously been no foot and ankle-specific patient-reported
32 outcome measures in Finnish.

33 *Methods:* The Visual Analogue Scale Foot and Ankle (VAS-FA) was translated and
34 adapted into Finnish. Thereafter, 165 patients who had undergone foot and ankle
35 surgery completed a questionnaire set on two separate occasions. Analyses included
36 testing of floor-ceiling effect, internal consistency, reproducibility, and validity.

37 *Results:* Minor linguistic differences emerged during the translation. Some structural
38 adjustments were made. The mean (SD) total VAS-FA score was 74 (23). In the three
39 subscales, maximum scores were noted in 2-5% of the responses, and internal
40 consistency ranged from 0.81 to 0.94. Reproducibility was excellent (ICC, 0.97). The
41 total VAS-FA score correlated significantly with the Lower Extremity Functional
42 Scale ($r = 0.84$) and the 15D Mobility dimension ($r = 0.79$). The VAS-FA loaded on
43 two factors (pain/movement and problems/limitations).

44 *Conclusions:* The Finnish version of the VAS-FA has high reliability and strong
45 validity.

46 **Keywords:** reliability, validity, foot, ankle, VAS-FA

47

48 **1. Introduction**

49 Modern medical care increasingly measures what matters to the patient. Patient-
50 centered treatment outcomes can be evaluated by using patient-reported outcome
51 measures (PROMs). The PROMs can be divided into generic and disease-specific.

52

53 The foot and ankle region is a subtle entity. A wide range of instruments has
54 previously been described for foot and ankle assessments [1]. Disease-specific
55 PROMs may be required to accurately measure foot and ankle function. These
56 instruments include the English version of the Visual Analogue Scale Foot and Ankle
57 (VAS-FA) [2]. The VAS-FA has been further validated in Thai and Indian languages
58 (Malayalam) [3,4].

59

60 Thus far there has been no validated foot and ankle-specific PROMs available in
61 Finnish. The present study aimed to translate and adapt the VAS-FA instrument into
62 Finnish and psychometrically test its reliability and validity among patients who had
63 undergone foot and ankle surgery.

64

65 **2. Materials and methods**

66 *2.1 Ethical considerations and participants*

67 The study protocol was approved by the Ethics Committee of Helsinki and Uusimaa
68 Hospital District, Finland. The study inclusion criteria were full understanding of
69 written Finnish, age of at least 18 years, and previous foot or ankle surgery.

70 Participants provided signed informed consent according to the Declaration of
71 Helsinki [5]. Participants were selected either from a database into which patients
72 were prospectively entered before the electronic hospital database was established, or
73 using Finnish National Institute for Health and Welfare procedure codes
74 (NHJ10 Ankle fracture osteosynthesis; NHU20 Removal of implants from foot or
75 ankle; NHG20 Tibiotalar joint fusion).

76

77 *2.2 Translation and cross-cultural adaptation*

78 Permission to use the VAS-FA was obtained from the copyright holder (Professor
79 Martinus Richter). The translation and cross-cultural adaptation adhered to the
80 International Society of Pharmacoeconomics and Outcome Research (ISPOR)
81 guidelines [6].

82

83 Two native Finnish translators, fluent in English and experts in the field of
84 rehabilitation, independently produced two forward-translations into Finnish. The
85 Finnish versions were then synthesized into one by a steering group, and a written
86 report was produced. An English translator produced a back-translation back into
87 English. The translator has competence in translating PROMs, has no medical
88 background and no (at the time of translation) previous knowledge of the translated
89 instrument, is fluent in Finnish, and is familiar with Finnish culture. A back-
90 translation panel consisting of all three translators reviewed the process, discussed any
91 discrepancies, and produced a written report.

92

93 A committee of four physicians and the key in-country person reviewed all the phases
94 on a separate occasion and produced a written report proposing a pre-final version.

95

96 The pre-final version was pretested according to the Beaton et al. guideline [7] among
97 20 Finnish patients who had undergone foot and ankle surgery during the previous
98 month. Patients were then cognitively debriefed following the European Organisation
99 for Research and Treatment of Cancer guidelines [8] to identify any offensive content,
100 understandability, cultural relevance, problems in answering the items, and whether
101 the patient would ask anything differently.

102

103 Finally, the expert committee reviewed the pretesting and cognitive debriefing
104 outcomes. The committee proposed a final Finnish version of the VAS-FA, which was
105 thereafter proofread by a linguistic professional of the Finnish Medical Society
106 Duodecim finalizing the Finnish version of the VAS-FA (Supplement).

107

108 *2.3. Reliability and validity testing*

109 The authors included in the first questionnaire package a pre-information form,
110 questions about the general health state, ankle pain and stiffness, the Finnish version
111 of the VAS-FA, the Lower Extremity Functional Scale (LEFS), and the 15D generic
112 health-related quality of life (HRQoL) instrument. Patients who did not return the first
113 questionnaire compilation within a week received a reminder letter. After the
114 participants had completed the first questionnaire, the authors mailed them the VAS-

115 FA instrument a second time along with a survey whose purpose was to ascertain
116 whether the patients' health status had changed after completing the first round of
117 questionnaires. Participants who completed the VAS-FA twice were included in the
118 final analyses.

119 2.4 PROMs

120 2.4.1. Visual Analogue Scale Foot and Ankle

121 The VAS-FA is a validated foot and ankle-specific PROM for assessing a variety of
122 musculoskeletal conditions [2,9]. It contains 20 items on a visual analog scale (0-100
123 mm, worst to best). The total score ranges between 0 and 100 points. The VAS-FA can
124 be divided into three subscales: pain (4 items), function (11 items), and other
125 complaints (5 items). The VAS-FA has a high intra-class correlation coefficient (ICC,
126 0.99) and internal consistency (Cronbach α , 0.99) [3]. The VAS-FA pain scale has
127 shown significant correlation with the Hannover Scoring System ($r = 0.90$) and the
128 SF-36 ($r = 0.70$) [2]. The Hannover Scoring System is a 20-item questionnaire
129 assessing symptom severity and functional capability [10]. The SF-36 is a general
130 health survey based on 36 items [11] and is widely used internationally.

131

132 2.4.2. Lower Extremity Functional Scale

133 The LEFS is a 20-item lower extremity-specific PROM developed to assess lower
134 extremity function [12]. The authors used the Finnish version of the LEFS [13]. The
135 LEFS scores 20 individual activities on a five-point scale (0-4, worst to best). The
136 total score ranges from 0 to 80 points, where higher scores indicate better function.
137 The LEFS has proven reliable, responsive, and valid in assessing foot and ankle

138 function [12,13,14,15]. The psychometric properties of the LEFS have been reported
139 to be superior to many widely used function-related foot and ankle instruments [1,16].

140

141

142 *2.4.3. 15D instrument*

143 The 15D is a valid generic HRQoL instrument [17]. It contains 15 dimensions:
144 moving, seeing, hearing, breathing, sleeping, eating, speech, excretion, usual
145 activities, mental function, discomfort and symptoms, depression, distress, vitality,
146 and sexual activity [17]. Respondents elect one of the five levels in each dimension
147 that best describes their current state of health (1-5, best to worst). The 15D produces
148 both a HRQoL profile and a single index score representing the overall HRQoL. The
149 reproducibility and the minimal important change of the 15D are estimated at 0.90
150 and 0.015, respectively [18,19].

151

152 *2.4.4. Sociodemographic and clinical data questionnaire*

153 Patients reported their general state of health during the previous week on a visual
154 analogue scale (0-100 mm, worst to best). The scale also served as a single-item
155 measure to capture subjective feelings concerning foot and ankle pain during activity
156 and at rest.

157

158 In addition, the authors obtained information on patient age and sex, weight, height,
159 smoking habits, occupation, and educational level. Clinical data consisted of
160 information on the surgical procedure and duration of symptoms.

161

162

163 *2.5 Statistics*

164 The results are expressed as means with standard deviation (SD) or with 95%

165 confidence intervals (95% CIs), as counts with percentages, or frequency

166 distributions.

167

168 The “floor value” was defined as the worst possible value of the item or as the

169 minimum total value of the scale. The “ceiling value” was the best possible value of

170 the item or the maximum total value of the scale. The internal consistency was

171 calculated using Cronbach’s alpha [20]. The reproducibility of the total scale and the

172 subscales were calculated using the ICC and coefficient of reproducibility (CR).

173

174 Construct validity was studied by using principal-component factor analysis with

175 oblique rotations factor loadings. Correlation coefficients were calculated by the

176 Pearson method. Sidak’s adjustment was applied to correct levels of significance for

177 multiple testing if appropriate. Bias-corrected bootstrapping (5000 replications) was

178 used to obtain the confidence intervals for the mean changes and reproducibility.

179

180 Linear regression analyses were used to identify the appropriate predictors of the 15D

181 age- and gender-standardized regression coefficients Beta (β). The β -value is a

182 measure of how strongly each predictor variable influences the criterion (dependent)

183 variable. The β was measured in units of standard deviation. Cohen’s standard for β -

184 values above 0.10, 0.30, and 0.50 represent small, moderate, and strong correlations,
185 respectively.

186 Statistical analyses were performed using SPSS 23.0 (SPSS Inc., Chicago, IL, USA)
187 or STATA 14.0. (StataCorp LCC, Texas, USA). Predefined hypotheses are presented
188 in Table 1. Reporting was done adhering to the COSMIN checklist [21].

189 **3. Results**

190 *3.1. Translation and adaptation*

191 The forward translations of the VAS-FA translated well into Finnish. The back-
192 translation panel review found no major linguistic issues compared to the original
193 English version. However, small changes were made to the Finnish VAS-FA to adhere
194 to Finnish linguistics. In the original VAS-FA questionnaire, there are clarifications of
195 some terms in the instructions. In the Finnish version, both the back-translation
196 review panel and the steering group decided that they should be omitted, as adding
197 examples in the actual items were considered more convenient. Thus the description
198 of “physical rest” was thereafter described as “(e.g. laying and sitting)” in item 2. The
199 phrase “physical activity” in item 4 was also modified to “(e.g. walking, exercising)”.
200 In item 13, “one leg standing” was replaced with “standing on injured leg” for more
201 accuracy. As the term “orthopedic shoe” may not be generally understood, an example
202 “(e.g. elevated or wider shoe)” was added into item 18. Analyzing the results of the
203 pretests and the cognitive debriefing gave no reason for change.

204

205 *3.2. Reliability*

206 Altogether 212 questionnaire booklets were returned and 165 participants (78%)

207 completed the VAS-FA twice (Table 2). The mean time between the start of symptoms
208 and completing the questionnaires was approximately five years.

209

210

211 3.2.1. *Floor and ceiling effect*

212 In the total VAS-FA score or the three subscales (Function, Pain, Other complaints),
213 no single participant received the lowest score (Table 3). Altogether 5%, 4%, and 2%
214 of the participants scored the maximum points in the subscales of Pain, Function, and
215 Other complaints, respectively. Several single items reached the ceiling effect (Table
216 3).

217

218 3.2.2. *Internal consistency*

219 Cronbach's alpha (CI 95%) was high in all subscales: Function 0.94 (0.93 to 0.96),
220 Pain 0.91 (0.88 to 0.94) and Other complaints 0.81 (0.75 to 0.85).

221

222 3.2.3. *Reproducibility*

223 The mean (SD) VAS-FA score was 74 (23) in the first assessment. Between the first
224 and the second completion of the VAS-FA, nine patients (5.4%) reported slightly
225 worsened and eight patients (4.8%) improved health between the two assessments.
226 Health state was stable for the remaining patients (89.8%). The mean change between
227 the two assessments was 1.6 points. The total scale and its subscales all had good

228 reproducibility (Table 4). Absolute reliability of the total scale was good, as the CR
229 was 16.

230

231 3.3. *Validity*

232

233 3.3.1. *Factor analysis*

234 In factor analysis, the VAS-FA loaded on two factors, explaining 70% of the total
235 variance (Table 5). The first factor included items of pain and movement. The other
236 factor consisted of items concerning foot and ankle problems and restrictions.

237

238 3.3.2. *Convergent and criterion validity*

239 The VAS-FA total score had strong correlation with the LEFS score (Figure 1). The
240 15D index and its dimensions of Mobility, Usual activities, Discomfort and
241 symptoms, and Vitality correlated strongly with the VAS-FA total score and all of its
242 three subscales (Figure 2). The total VAS-FA score and its subscales had significant
243 correlation with general health, and pain during activity and at rest (Table 6). Patient
244 weight (body mass index) and age had a moderate negative correlation with the
245 Function subscale (Table 6).

246

247 **4. Discussion**

248 The VAS-FA was successfully translated and cross-culturally adapted into Finnish.
249 Psychometric testing of the Finnish VAS-FA provided evidence of its validity and

250 reliability among patients who had undergone foot and ankle surgery.

251

252 *4.1. Translation and adaptation*

253 The authors used a rigorous translation protocol [6,7,8] to establish a linguistically
254 valid Finnish version of the VAS-FA instrument. Using well-accepted international
255 translation guidelines guaranteed conceptual equivalence to the original questionnaire.
256 Accordingly, the translation can be considered culturally and linguistically appropriate
257 for the target language. The authors' linguistic validation of the VAS-FA into Finnish
258 found no cultural differences in health, disease, or operational environment in the
259 adaptation process between the original and the translated version. Previously
260 published translation and validation reports of the VAS-FA to another language have
261 not specified if any linguistic or cultural changes were made in the translation process
262 [3,4].

263

264 In the authors' translation and cross-cultural adaptation, several minor adjustments
265 and clarifications were made. The final changes and adjustments were assessed by a
266 group of health care professionals who are familiar with rehabilitation and with
267 several medical specialties to guarantee the accuracy and necessity of the changes
268 made.

269

270 *4.2. Reliability*

271 In floor-ceiling values, the hypothesized cut-off is at 15% [22]. In the Thai version,
272 the authors noted no maximum or minimum scores [3]. The present study, with a

273 significantly larger study population, showed that the VAS-FA had no floor or ceiling
274 effect in the total score or in its three subscales. However, several single items reached
275 the ceiling, as over 15% of the participants achieved the maximum points. No clear
276 relationship between the content of these items could be noted. Nonetheless, the items
277 that reached the ceiling effect were associated with passive activities such as pain at
278 rest, existence of callus, occupational limitations, driving a car, walking, daily
279 activities, and footwear (Table 3).

280 Internal consistency of 0.8 or more is considered sufficiently high [23]. Anghong et
281 al. reported an extremely high internal consistency of 0.99 for the total VAS-FA score
282 in their psychometric analyses based on 42 patients with foot and ankle problems [3].
283 The original validation study by Richter et al. did not calculate the internal
284 consistency [2]. Calculating the internal consistency of the three subscales using
285 Cronbach's alpha provided insight into the correlation between different items of the
286 VAS-FA. The authors estimated the internal consistency to be the following: Function
287 0.94, Pain 0.91, and Other complaints 0.81. These estimates represent good internal
288 consistency for all subscales.

289

290 Anghong et al. reported an extremely high ICC of 0.995 for the FAS-VA [3]. No
291 information on the time between the two tests was provided by the authors [3]. In the
292 present study, the test-retest reliability was assessed after a 2-week interval. The 2-
293 week time frame between the assessments has previously been estimated to be
294 optimal in patients with stable health or symptoms [24]. The present study showed
295 that the ICC was 0.97 for the total VAS-FA score. The ICC for the subscales ranged
296 from 0.95 to 0.97. These results demonstrate the high relative reliability of the VAS-
297 FA instrument.

298

299 The CR estimates the value of absolute difference between two test scores. The CR
300 can be a more accurate estimation of absolute reliability than the standard error of
301 measurement. The CI reported together with the CR value gives further precision to
302 the assessment of absolute reliability. The authors estimated the absolute reliability of
303 the total VAS-FA at 16 (CI, 13 to 21). Previous psychometric studies of the VAS-FA
304 have not estimated the absolute reliability [2,3,4,9].

305

306 4.3. Validity

307 The VAS-FA has been divided into three subscales [2]. The authors hypothesized that
308 factor analysis would support the construct of the three subscales. After trialing
309 several different models, the VAS-FA factor loading was clear on two main themes: 1)
310 pain and movement and 2) problems and restrictions. These factors explained 70% of
311 the total variance. The factor has to explain at least 10% of the total variance to be
312 accepted. Nonetheless, the authors decided to assess the psychometrics of the Finnish
313 version of the VAS-FA for its original three subscales.

314

315 A study by Goldstein et al. claimed that one foot and ankle PROMs would be enough
316 to capture the current foot and ankle state [25]. Richter et al. reported strong
317 correlation between the VAS-FA total score and the Hannover score ($r= 0.70$) [2]. In
318 the present study, the VAS-FA total score correlated significantly with the function-
319 specific LEFS score (Figure 1). It would seem that both questionnaires primarily
320 measure the same construct of function. The VAS-FA score also correlated
321 significantly with the 15D Mobility dimension, supporting the construct validity of

322 the VAS-FA instrument for functional assessment. Nair et al. found a strong
323 correlation between the VAS-FA and the American Orthopedic Foot & Ankle Society
324 (AOFAS) score in their analysis of results in a cohort of 50 malleolar fracture patients
325 [4]. Furthermore, Anghong et al. reported a significant correlation of the VAS-FA
326 score and the SF-36 Physical Functioning scale ($r= 0.55$) [3].

327

328 The SF-36 is usually divided into two different component summaries or eight scaled
329 scores [11]. Richter et al. used all eight SF-36 scaled scores and "standardized" them
330 into a possible 100-point maximum for reference outcome in assessing the convergent
331 validity of the VAS-FA [2]. The present study is not directly comparable to Richter et
332 al., as the authors used a different generic PROM (15D). The authors assessed the
333 correlation between the 15D index score and the VAS-FA total score. The correlation
334 between these two instruments was 0.66. Richter et al. and Anghong et al. found a
335 notable correlation between the VAS-FA and the generic SF-36 health survey "total
336 score" (0.60 and 0.62, respectively) [2,3] supporting the findings of the present study.
337 Furthermore, in the Thai study, moderate correlation with the SF-36 Vitality subscale
338 ($r= 0.22$) was noted [3]. However, the present study found a strong correlation
339 between the VAS-FA and 15D Vitality dimension ($r= 0.54$). The authors'
340 interpretation is that the more foot and ankle limitations, pain, or problems, the more
341 impaired HRQoL the participants had.

342

343 The total VAS-FA score and its subscales had significant correlation with general
344 health, pain during activity, and pain in rest (Table 6). Patient BMI and age had a

345 moderate negative correlation with the Function subscale. These results indicate that
346 the higher the BMI or age, the lower the functional score will be.

347

348 *4.4. Strengths and weaknesses*

349 The authors recruited a representative population of foot and ankle patients that
350 compared favorably with published reports of VAS-FA psychometrics [2,3,4]. The
351 authors used two validated PROMs, of which the other was a well-recognized foot
352 and ankle tool (LEFS) [12,13], to assess the convergent validity of the Finnish VAS-
353 FA. Further, to the authors' knowledge, the present study is the first to assess the
354 construct validity of the VAS-FA using factor analysis, giving more insight into the
355 structural components of the VAS-FA instrument. A weakness of the present study
356 was that time between the start of symptoms and completion of the questionnaires
357 was in some cases relatively long. This may have had an impact on the maximum
358 points in some items and the reproducibility values, as some of the patients may have
359 fully rehabilitated after surgery. As most patients underwent operation after trauma
360 and the defect located in the ankle in a significant proportion of patients, the results of
361 this study should be interpreted with caution among the general population with foot
362 and ankle problems.

363

364 **5. Conclusions**

365 The VAS-FA was successfully translated and cross-culturally adapted into Finnish.
366 This study showed evidence of the validity and reliability of the Finnish version of the
367 VAS-FA. The Finnish VAS-FA is available now for both clinical and research
368 purposes when evaluating foot and ankle function.

369 **Conflicts of interest:**

370 JPR: None

371 EJT: None

372 RPR: None

373 HK: None

374 JL: None

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378

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382

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453 of different outcome instruments following foot and ankle trauma. *Foot Ankle Int.*
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455 Table 1. Predefined hypotheses for validation of the Finnish VAS-FA.

Feature	Hypothesis	Statistical Method	Result	Hypothesis Confirmed/Rejected
Reproducibility	ICC is ≥ 0.90	Two-way mixed model with absolute agreement	0.93	Confirmed
Internal consistency	Internal consistency is ≥ 0.90	Cronbach's alpha	0.96	Confirmed
Validity				
Content validity	Floor values $\leq 15\%$	Percentage of maximum or minimum scores	0%	Confirmed
	Ceiling values $\leq 15\%$		2-5%	Confirmed
Convergent validity	VAS-FA correlation with	Spearman		
	15D total index is strong		$r = 0.66$	Confirmed
	15D Mobility dimension is strong		$r = 0.78$	Confirmed
	VAS-FA correlation with LEFS is strong		$r = 0.84$	
Criterion validity	VAS-FA correlation with	Spearman		
	age is moderately negative		$r = -0.16$	Rejected
	BMI is moderately negative		$r = -0.20$	Confirmed
	general health is strong		$R = -0.63$	Confirmed
	foot and ankle pain at rest is strong		$r = -0.70$	Confirmed
	foot and ankle during activity is strong	$r = -0.81$	Confirmed	
Construct validity				
	VAS-FA loads on three factors	Principal-component factor analysis with oblique rotations factor loadings	Two factors	Rejected

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459 Table 2. Participants' sociodemographic and clinical characteristics.

	N = 165
Female, n (%)	90 (54.5)
Age, years, mean (SD)	55.6 (16.1)
BMI, mean (SD)	27.3 (4.9)
Education, n (%)	
Elementary school	3 (23.6)
Vocational school	36 (21.8)
High school	28 (23.0)
University	47 (28.5)
In working life, n (%)	73 (44.2)
Smokers, n (%)	26 (15.8)
General health VAS, mean (SD)	24 (24)
Indication for surgery, n (%)	
Fracture	156 (94.6)
Soft tissue infection	6 (3.6)
Other	3 (1.8)
Defect location, n (%)	
Ankle	137 (83.0)
Foot	28 (17.0)
Time of symptoms (years), mean (SD)	4.9 (4.7)
Foot and ankle pain, VAS, mean (SD)	
At rest	8 (14)
During activity	16 (21)
Foot and ankle stiffness, VAS, mean (SD)	20 (23)
15D score, mean (SD)	0.90 (0.093)

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462 Table 3. Mean VAS-FA scores, response rate, floor and ceiling values.

Category	Mean (SD)	Response Rate (%)	Floor (%)	Ceiling (%)
Pain (Item)				
2	78 (30)	98	1	12
3	84 (22)	96	1	18
4	63 (35)	100	2	7
5	69 (31)	97	1	8
Total	73 (27)		0	5
Function (item)				
8	57 (36)	100	3	9
9	73 (30)	99	1	14
10	81 (27)	93	1	26
11	89 (20)	78	1	24
12	78 (27)	99	1	16
13	72 (33)	97	1	17
14	76 (28)	100	1	16
15	56 (39)	98	6	11
16	90 (19)	100	1	30
17	88 (24)	98	1	27
19	77 (30)	100	1	21
Total	76 (24)		0	4
Other				
Complaints (Item)				
1	72 (30)	100	1	8
6	59 (36)	99	1	8
7	82 (26)	98	1	17
18	77 (30)	99	1	21
20	77 (30)	100	1	22
Total	74 (23)		0	2

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465 Table 4. Reproducibility of the VAS-FA instrument.

Category	First measurement Mean (SD)	Change From First to Second Measurement Mean (95% CI)	ICC (95% CI)	CR* (95% CI)
Pain	73 (27)	2.1 (0.2 to 3.9)	0.95 (0.92 to 0.96)	24 (20 to 28)
Function	76 (24)	1.6 (0.2 to 3.0)	0.96 (0.95 to 0.97)	18 (14 to 26)
Other complaints	74 (23)	1.5 (-0.1 to 0.30)	0.95 (0.93 to 0.96)	20 (17 to 23)
Total	75 (23)	1.6 (0.4 to 2.9)	0.97 (0.95 to 0.98)	16 (13 to 21)

466 *Expresses the expected maximum size of 95% of the absolute differences between

467 paired observations. 95% CI obtained by bias corrected bootstrapping.

468 ICC, intraclass correlation coefficient; CR, coefficient of repeatability.

469 Table 5. Factor analysis of the VAS-FA.

Item	Factor 1	Factor 2
1	0.53	
2	0.58	
3	0.61	
4	0.88	
5	0.88	
6	0.87	
7	0.70	
8	0.97	
9	0.62	
10		0.52
11		0.72
12	0.55	
13	0.56	
14		0.52
15	0.78	
16		0.85
17		0.96
18	0.58	
19	0.57	
20	0.52	

470 Explanatory factor analysis with oblique rotations factor loadings of the VAS-FA.

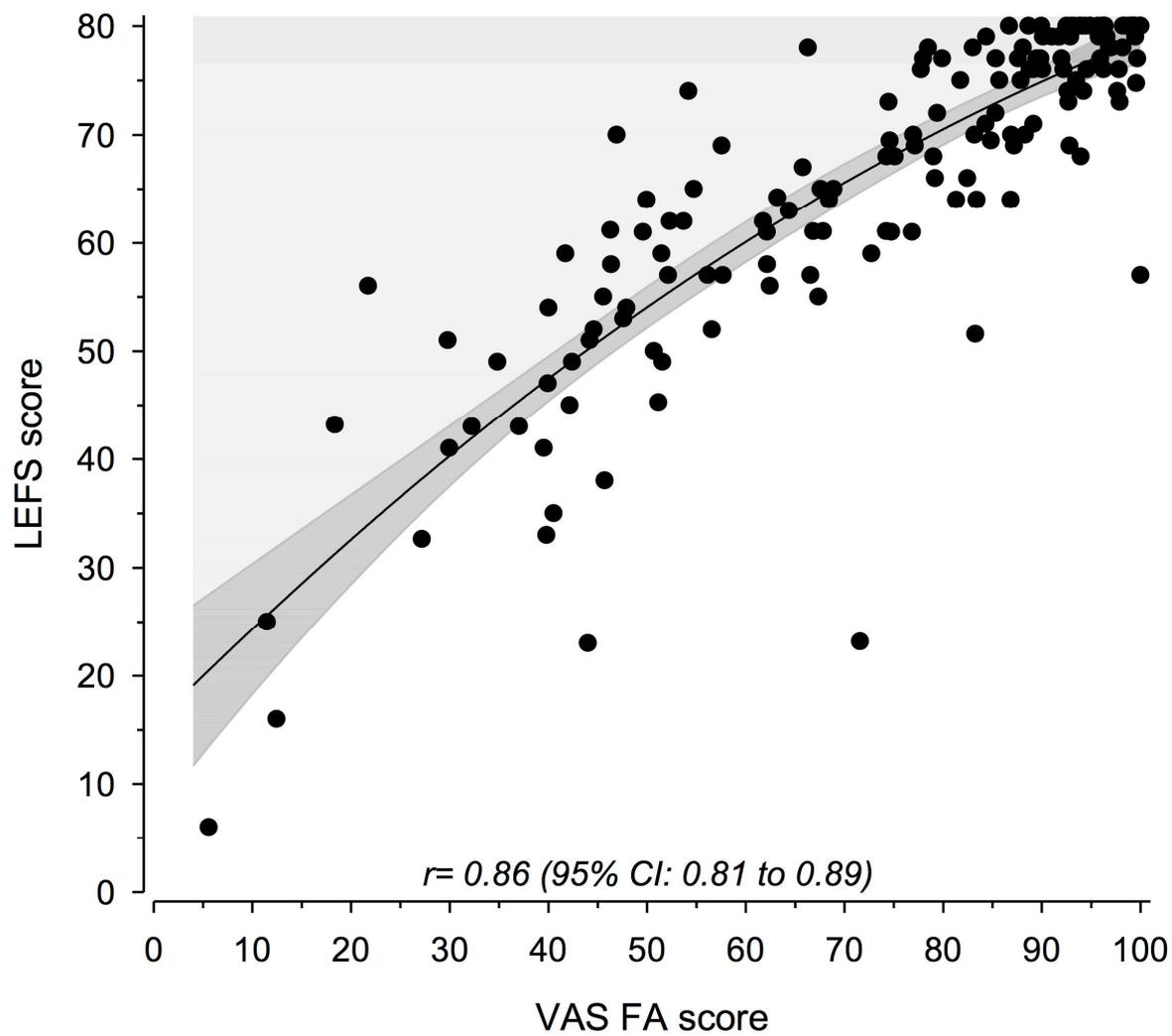
471 Coefficients with values <0.50 not shown. Factors explained 70% of the total

472 variance. Factor 1: pain/movement; Factor 2: problems/limitations.

473 Table 6. Correlation of the VAS-FA with sociodemographic and clinical parameters.

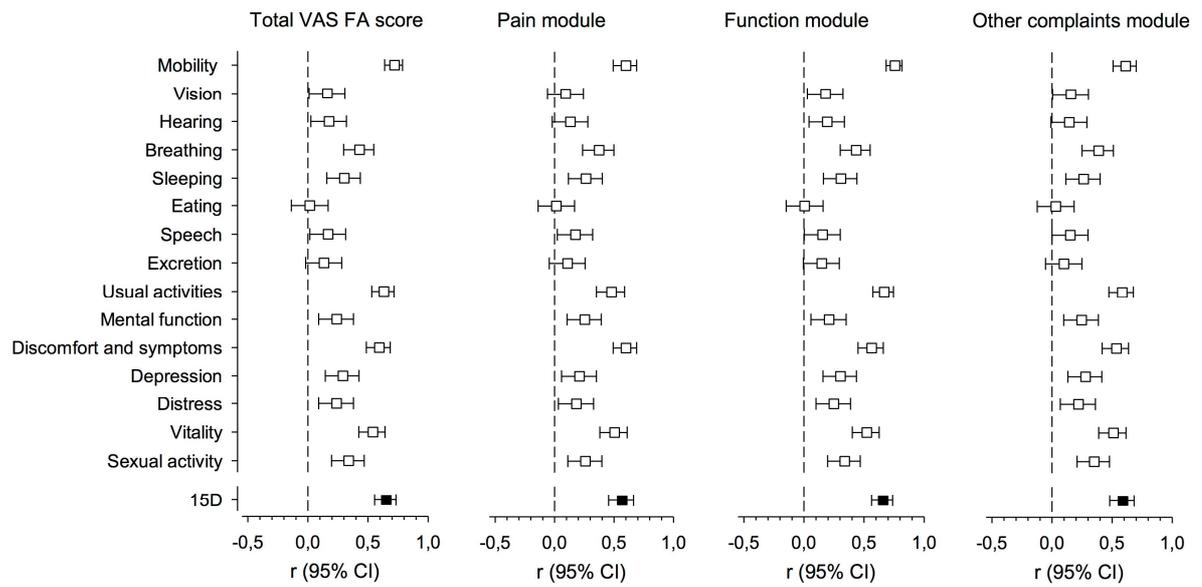
	Pain	Function	Other Complaints	Total
	<i>r</i> (95% CI)	<i>r</i> (95% CI)	<i>r</i> (95% CI)	<i>r</i> (95% CI)
Age	-0.05 (-0.20 to 0.11)	-0.22* (-0.36 to -0.06)	-0.10 (-0.25 to 0.05)	-0.16 (-0.30 to -0.01)
Gender	-0.01 (-0.15 to 0.15)	-0.03 (-0.18 to 0.12)	-0.07 (-0.22 to 0.08)	-0.04 (-0.19 to 0.12)
BMI	-0.15 (-0.30 to 0.01)	-0.21* (-0.36 to -0.05)	-0.18 (-0.33 to -0.02)	-0.20 (-0.35 to -0.04)
Symptom duration	0.06 (-0.10 to 0.21)	0.06 (-0.10 to 0.21)	0.01 (-0.15 to 0.16)	0.05 (-0.11 to 0.20)
General health	-0.54*** (-0.64 to -0.42)	-0.64*** (-0.72 to -0.54)	-0.55*** (-0.65 to -0.43)	-0.63*** (-0.71 to -0.52)
Pain at rest	-0.71*** (-0.78 to -0.63)	-0.71*** (-0.78 to -0.63)	-0.63*** (-0.72 to -0.53)	-0.70*** (-0.77 to -0.61)
Pain during activity	-0.75*** (-0.81 to -0.68)	-0.80*** (-0.85 to -0.72)	-0.72*** (-0.78 to -0.63)	-0.81*** (-0.86 to -0.75)

474 Figure 1. Correlation of the VAS-FA with the LEFS instrument.



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476 Figure 2. Correlation of the VAS-FA with the 15D and its dimensions.



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