Treatment of osteochondral defects of the talus

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Chapter 16

Translation and validation of the German Foot and Ankle Outcome Score

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Submitted.
Abstract

Purpose

Outcome assessment is critical in evaluating the efficacy of orthopaedic procedures. The Foot and Ankle Outcome Score (FAOS) is a 42-item questionnaire divided into five subscales, which has been validated in several languages. Germany has no validated outcome score for general foot and ankle pathology. The aim of this study was to develop a German version of the FAOS and to investigate its psychometric properties.

Methods

Forward and backward translation was executed according to official guidelines. The final version of the FAOS was investigated in 150 patients with various foot and ankle disorders. All patients completed the FAOS, Short Form-36, numeric rating scales for pain and disability, and the Hannover questionnaire. The FAOS was re-administered after one week. Test-retest reliability, internal consistency, minimal detectable change, construct validity, and floor and ceiling effects were analyzed.

Results

Test-retest reliability and internal consistency of each subscale were excellent (intraclass correlation coefficient, 0.88 to 0.95; Cronbach's alpha, 0.94 to 0.98). The minimal detectable changes of each subscale were 17.1 to 20.8 at the individual level and 2.0 to 2.4 at group level. There were moderate to strong correlations between FAOS subscales and physical outcomes and low to moderate correlations between FAOS subscales and mental outcomes. Floor and ceiling effects were not present.

Conclusion

The German version of the FAOS is a reliable and valid instrument for use in foot and ankle patients.

Introduction

Outcome assessment is critical in evaluating the efficacy of orthopaedic procedures. The assessment of outcome from the patient's perspective becomes more recognized. Questionnaires are used to assess the patient's perspective on the degree of impairment, pain, disabilities, and quality of life. Translation and validation of the original questionnaire into the target language are essential for the conduction of multinational studies and for the comparison of outcomes from different countries.

There are few validated outcome measures for disability of the foot and ankle. The Foot and Ankle Outcome Score (FAOS) is a valid and reliable instrument. The score is available in English, Swedish, Portuguese, Persian, Turkish, and Dutch. Germany has the largest population of Europe but, to our knowledge, has no validated outcome score for general foot and ankle pathology. Therefore, the aim of...
this study was to translate and validate the FAOS into German, enabling its use in the German-speaking population.

Methods

Translation procedure

Forward and backward translation was executed according to official guidelines. Two bilingual translators with different profiles (one physician) whose native language was German produced two independent forward translations. A synthesis of these translations was conducted. Two other translators without medical background, with English as the native language and blinded to the original version, then translated the questionnaire back into the original language. A committee composed of the translators and a German orthopaedic surgeon consolidated all the versions of the questionnaire and developed the final version for field testing (Supplement). The last step of the translation procedure was the pretesting on several random patients. The patients were asked whether they understood all the items and whether they had suggestions for improvement. No difficulties were encountered, and changes to the final version were not indicated (Supplement).

Validation procedure

A random sample of 150 outpatients with chronic foot and ankle related disorders were included in the study at a single institution. Exclusion criteria were inability to understand or complete the questionnaires, or refusal to sign informed consent. There were 65 male and 85 female patients with a mean age of 48 ± 16 years (range, 18 – 79 years). The diagnoses of the ankle included osteochondral defects, osteoarthritis, anterior or posterior impingement, instability, loose bodies, and tendonitis; diagnoses of the foot included plantar fasciitis, metatarsalgia, and pes planus. About 80% were preoperative or nonoperative patients, and 20% were postoperative during routine controls (not in the early postoperative period). The study protocol was approved by the local Medical Ethics Committee (Nr. 720/2010). All patients signed informed consent.

Each patient completed a package of questionnaires containing the FAOS, Short Form-36 (SF-36), numeric rating scale (NRS) for pain and disability, and Hannover questionnaire. The FAOS was re-administered under similar conditions with a 1-week interval. The patients had to indicate whether any change in the (extent of) symptoms had occurred during the interval.

Instruments

The FAOS is a 42-item questionnaire intended to evaluate symptoms and functional limitations related to the foot and ankle. It consists of five subscales: pain; other symptoms; activities of daily living (ADL); sport and recreational activities; and foot- and ankle-related quality of life (QoL). Patients score each question on a Likert scale (no, mild, moderate, severe, extreme) resulting in a score ranging from 0 to 4. The scores of the subscales are calculated by the sum of the items included. The total scores are then transformed to a scale from 0 to 100. Higher total values indicate lesser problems and/or functional limitations.

The SF-36 is a widely used, patient-administered, generic health related quality of life instrument, which has been translated and validated into German. It comprises 36 items across eight subscales, which are each calculated on a 0 to 100 scale (100 indicating no symptoms and 0 indicating extreme symptoms).

Numeric rating scales (NRS) were used to determine the severity of pain and disability
of the ankle and foot. A score of 0 accounts for no pain or disability; a score of 10 represents the most severe pain or disability imaginable.

The Hannover questionnaire rates patients’ complaints and functional status based on a severity-symptom scale and functional status. It contains 20 subjective questions for the patient with five possible answers to each. A test-retest reliability of $r = 0.91$ has been reported but the score has not been validated.387

**Statistical analysis**

The FAOS subscale scores were calculated with use of formulas provided by the developers.3 The test-retest reliability was assessed by calculation of intraclass correlation coefficients (ICC, two-way random effects model).355,383 The test-retest reliability was considered good if the ICC is 0.40 – 0.75 and excellent if the ICC > 0.75.134 Systematic differences between the first and second test were assessed with use of paired t-tests.

Internal consistency determines whether the questions cover the same construct. Cronbach’s alpha was calculated to assess the internal consistency of each subscale of the FAOS.89 This coefficient addresses the homogeneity of the questions included in a questionnaire. Cronbach’s alphas of 0.7, 0.8, and 0.9 are considered to represent a fair, good, and excellent degree of internal consistency, respectively.53

There is a 95% confidence rate that the health status of a patient improves or deteriorates when the change in scores exceeds the minimal detectable change. The minimal detectable change (MDC) at the individual level was calculated as $1.96 \times \sqrt{2 \times \text{standard error of measurement}}$ (i.e., the square root of the within-subject variance).383 The MDC at group level was calculated by dividing the MDC at the individual level by $\sqrt{n}$.383

Validity relates to the ability of a questionnaire to measure the outcome parameter of interest. Construct validity refers to the association with other measures in a manner that is consistent with theoretically derived hypotheses, in the absence of a “gold standard.”383 The FAOS subscales were compared with the SF-36, NRS pain and disability, and Hannover questionnaire. Pearson correlation coefficients were calculated to determine construct validity of the FAOS. Correlation coefficients of <0.30, 0.30 – 0.60, and >0.60, are considered low, moderate, and strong, respectively.207 Convergent and discriminate validity were evaluated (i.e., are correlations high where they are expected to be high, and low where they are expected to be low). We hypothesized that correlations of FAOS subscales with the physical outcomes (SF-36 subscales Physical functioning, Role physical, and Bodily pain; NRS Pain and Disability; and Hannover questionnaire) would be higher than correlations with the mental outcomes (other SF-36 subscales).

Floor and ceiling effects were registered for each scale. These effects are considered to be present if the amount of minimal or maximal scores exceeds 15%.383

**Results**

In the complete study population, the mean FAOS subscale Pain was $59.5 \pm 22.4$ (range,
Validation of the German FAOS

Therefore, data of 76 patients (51%) were used to calculate the reliability.

Test-retest reliability of each subscale and internal consistency were excellent (Table 1). The MDCs at the individual level were between 17.1 and 20.8; those at group level were between 2.0 and 2.4 (see Table 1).

There were moderate to strong correlations between FAOS subscales and SF-36 Physical functioning, Role physical, and Bodily pain; NRS Pain and Disability; and Hannover questionnaire (Table 2). There were low to moderate

Table 1. FAOS subscale scores (n = 76), test-retest reliability (n = 76), internal consistency (n = 150), and minimal detectable change (n = 76)

<table>
<thead>
<tr>
<th>FAOS subscale</th>
<th>Test (mean ± SD)</th>
<th>Retest (mean ± SD)</th>
<th>ICC (95% CI)</th>
<th>Cronbach’s alpha</th>
<th>Systematic difference</th>
<th>MDC_{individual}</th>
<th>MDC_{group}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>57.6 ± 23.0</td>
<td>58.7 ± 22.6</td>
<td>0.92 (0.88 - 0.95)</td>
<td>0.96</td>
<td>1.1 (p = 0.25)</td>
<td>18.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Symptoms</td>
<td>60.2 ± 21.1</td>
<td>63.0 ± 22.5</td>
<td>0.88 (0.82 - 0.93)</td>
<td>0.94</td>
<td>2.8 (p = 0.06)</td>
<td>20.0</td>
<td>2.3</td>
</tr>
<tr>
<td>ADL</td>
<td>69.4 ± 22.6</td>
<td>68.7 ± 23.9</td>
<td>0.89 (0.83 - 0.93)</td>
<td>0.94</td>
<td>0.7 (p = 0.61)</td>
<td>20.8</td>
<td>2.4</td>
</tr>
<tr>
<td>Sport</td>
<td>47.1 ± 29.0</td>
<td>48.7 ± 29.9</td>
<td>0.95 (0.93 - 0.97)</td>
<td>0.98</td>
<td>1.6 (p = 0.21)</td>
<td>17.2</td>
<td>2.0</td>
</tr>
<tr>
<td>QoL</td>
<td>38.5 ± 23.8</td>
<td>39.3 ± 22.2</td>
<td>0.93 (0.90 - 0.96)</td>
<td>0.97</td>
<td>0.8 (p = 0.40)</td>
<td>17.1</td>
<td>2.0</td>
</tr>
</tbody>
</table>

ADL = activities of daily living, CI = confidence interval, ICC = intraclass correlation coefficient, MDC_{group} = minimal detectable change at group level, MDC_{individual} = minimal detectable change at individual level, QoL = foot- and ankle-related quality of life, and SD = standard deviation.

Table 2. Construct validity. Correlation (Pearson correlation coefficient) between FAOS subscales and other outcome measures (n = 150)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Pain</th>
<th>Symptoms</th>
<th>ADL</th>
<th>Sport</th>
<th>QoL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF-36 Physical functioning</td>
<td>0.66</td>
<td>0.58</td>
<td>0.79</td>
<td>0.75</td>
<td>0.63</td>
</tr>
<tr>
<td>Role physical</td>
<td>0.33</td>
<td>0.34</td>
<td>0.54</td>
<td>0.53</td>
<td>0.43</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>0.80</td>
<td>0.59</td>
<td>0.68</td>
<td>0.62</td>
<td>0.66</td>
</tr>
<tr>
<td>Social functioning</td>
<td>0.36</td>
<td>0.36</td>
<td>0.38</td>
<td>0.44</td>
<td>0.38</td>
</tr>
<tr>
<td>Mental health</td>
<td>0.23</td>
<td>0.25</td>
<td>0.25</td>
<td>0.21</td>
<td>0.17</td>
</tr>
<tr>
<td>Role emotional</td>
<td>0.19</td>
<td>0.27</td>
<td>0.30</td>
<td>0.34</td>
<td>0.27</td>
</tr>
<tr>
<td>Vitality</td>
<td>0.21</td>
<td>0.22</td>
<td>0.26</td>
<td>0.21</td>
<td>0.26</td>
</tr>
<tr>
<td>General health perceptions</td>
<td>0.25</td>
<td>0.40</td>
<td>0.42</td>
<td>0.32</td>
<td>0.41</td>
</tr>
<tr>
<td>NRS Pain</td>
<td>-0.74</td>
<td>-0.47</td>
<td>-0.54</td>
<td>-0.52</td>
<td>-0.59</td>
</tr>
<tr>
<td>Disability</td>
<td>-0.55</td>
<td>-0.51</td>
<td>-0.63</td>
<td>-0.58</td>
<td>-0.61</td>
</tr>
<tr>
<td>Hannover questionnaire</td>
<td>0.71</td>
<td>0.74</td>
<td>0.75</td>
<td>0.78</td>
<td>0.64</td>
</tr>
</tbody>
</table>

All correlations were statistically significant (p < 0.05).

ADL = activities of daily living, NRS = numeric rating scale, SF-36 = Short Form-36, and QoL = foot- and ankle-related quality of life.
correlations between FAOS subscales and SF-36 Social functioning, Mental health, Role emotional, Vitality, and General health perceptions.

There were no floor or ceiling effects. The lowest score was obtained by 0%, 0%, 0%, 5%, and 1% of the patients on the subscales Pain, Symptoms, ADL, Sport, and QoL, respectively. The highest score was obtained by 7%, 5%, 10%, 5%, and 5% of the patients on the subscales Pain, Symptoms, ADL, Sport, and QoL, respectively.

Discussion

A German version of the FAOS was developed in the first part of the present study. The translation process was executed according to official guidelines.449 The translated version was tested in the second part of the study. According to the psychometric analyses, the translated version was shown a reliable and valid instrument for use in German-speaking patients with foot and ankle pathology.

Test-retest reliability and internal consistency of each subscale were excellent (see Table 1). There were moderate to strong correlations between FAOS subscales and physical outcomes, and there were low to moderate correlations between FAOS subscales and mental outcomes (see Table 2). In addition, no floor or ceiling effects were observed. According to the MDC, the FAOS may be more suitable for the evaluation at group level than at individual level. The relatively high MDC may be attributed to the diverse study population.101

Although only 76 of 150 patients were available for statistical analysis of test-retest reliability (due to a relatively low response rate of the second questionnaire or a changed situation), this number was well above the required number of 50.383 Cross-cultural adaption of the questionnaire was deemed unnecessary, because the German population can be considered similar to the Swedish population of the original version.336 Likewise, the patient burden imposed by administering the FAOS was not tested because it is considered to be identical to that of the original version (less than 10 min).336

Roos et al. invented the original English version (adapted from the Knee injury and Osteoarthritis Outcome Score).336 They tested the Swedish version in 213 patients.336 The psychometric properties were generally similar to the German version. Test-retest reliability varied from an ICC of 0.70 for ADL to 0.92 for QoL, and Cronbach's alpha varied from 0.88 for Symptoms to 0.97 for ADL. For construct validity, the FAOS subscales were compared with the Karlsson score. Spearman correlation coefficients of 0.58 to 0.67 were found. However, ceiling effects occurred in each subscale. The differences in ceiling effects between the original version and the developed translation may be contributed to the different study population. Roos et al. studied patients with previous ankle ligament reconstructions after a mean follow-up of 12 years, while our study population consisted of patients with a variety of foot and ankle disorders.

The original version has also been translated and validated into Turkish and Persian.207,297 Karatepe et al. studied 55 Turkish patients with various foot and ankle disorders.207 They found a test-retest reliability (ICC) of 0.70 to 0.96 and a Cronbach's alpha of 0.79 to 0.97 for each subscale. Correlations between FAOS and SF-36 subscales were comparable to those in our study. Floor or ceiling effects were not reported. Negahban from Iran validated the Persian version in 93 patients with foot and ankle disorders, mostly ankle sprain.297 ICCs were excellent but two subscales had low internal consistency (Cronbach's alpha of 0.39 for Symptoms and 0.62 for QoL). The correlations between FAOS and several SF-36 subscales were generally somewhat lower than in our study. Floor and
ceiling effects were not present. Although the psychometric properties of the other languages are slightly inferior to the German version, all versions meet the quality criteria. The previous studies and our study indicate that the FAOS can be regarded a reliable and valid international outcome measure.

Other outcome measures developed for the German foot and ankle patient are the Visual Analog Scale Foot and Ankle (VAS FA) and the Foot and Ankle Ability Measure (FAAM). The VAS FA, however, is not available in other languages. Furthermore, only the construct validity was reported in healthy individuals. The FAAM is a reliable and valid international instrument with psychometric properties similar to the FAOS. The score has two subscales (ADL and Sport). The English and Persian versions have been validated in a range of foot and ankle disorders. However, the German version has been validated only in chronic ankle instability. In contrast, the FAOS has been validated in patients with various pathologic conditions. Possible advantages of the FAOS over the FAAM are a larger number of subscales and a broader target population.

The principal limitation of the present study is the fact that the sensitivity to change (i.e., responsiveness and minimal clinically important change) of the FAOS after an intervention was not investigated. Further studies are required to assess the sensitivity to change.

In conclusion, the developed German version of the FAOS is a valid and reliable instrument for foot and ankle patients. Future use of the score will allow comparison with the international literature and the execution of international multicenter studies. Translation and validation into other languages will expand its applicability.
„FAOS“ Fragebogen Fuß & Sprunggelenk

Datum: _____/_____/______   Geburtsdatum: _____/_____/______
Name: _______________________________________

Beantworten Sie bitte jede Frage durch ankreuzen des zugehörigen Kästchens.
Bitte nur ein Kästchen pro Frage ankreuzen. Wenn Sie sich unsicher sind, wie Sie die Frage beantworten sollen, wählen Sie die Antwort aus, die Ihnen am zutreffendsten erscheint.

Symptome
Diese Fragen beziehen sich auf Ihre Fuß/Sprunggelenksbeschwerden während der vergangenen Woche.

S1. Hatten Sie Schwellungen an Ihrem Fuß/Sprunggelenk?
   niemals     selten     manchmal     oft     immer
   [ ]       [ ]        [ ]       [ ]        [ ]

S2. Fühlten Sie ein Mahlen, hörten Sie ein Klicken oder irgendein Geräusch, wenn Sie Ihren Fuß/Ihr Sprunggelenk bewegten?
   niemals     selten     manchmal     oft     immer
   [ ]       [ ]        [ ]       [ ]        [ ]

S3. Blieb Ihr Fuß/Sprunggelenk hängen, oder blockierte er/es bei Bewegung?
   niemals     selten     manchmal     oft     immer
   [ ]       [ ]        [ ]       [ ]        [ ]

S4. Konnten Sie Ihren Fuß/Ihr Sprunggelenk ganz ausstrecken?
   immer     oft     manchmal     selten     niemals
   [ ]       [ ]        [ ]       [ ]        [ ]
S5. Konnten Sie Ihren Fuß/Ihr Sprunggelenk ganz beugen?

immer       oft       manchmal       selten       niemals
☐           ☐           ☐            ☐            ☐

Steifigkeit
Die nachfolgenden Fragen betreffen die Steifigkeit in Ihrem Fuß/Sprunggelenk während der letzten Woche. Unter Steifigkeit versteht man ein Gefühl der Einschränkung oder Verlangsamung der Fähigkeit Ihre Gelenke zu bewegen.

S6. Wie stark war Ihre Fuß/Sprunggelenkssteifigkeit morgens direkt nach dem Aufstehen?

keine       schwach       mäßig       stark       sehr stark
☐           ☐           ☐            ☐            ☐

S7. Wie stark war Ihre Fuß/Sprunggelenksteifigkeit nach dem Sie saßen, lagen, oder sich im Verlauf des Tages ausruhten?

keine       schwach       mäßig       stark       sehr stark
☐           ☐           ☐            ☐            ☐

Schmerzen
P1. Wie oft haben Sie Schmerzen im Fuß/Sprunggelenk?

nie          monatlich         wöchentlich             täglich              immer
☐           ☐           ☐            ☐            ☐

Wie ausgeprägt waren Ihre Schmerzen in der vergangenen Woche als Sie z.B.?

P2. Sich im Fuß/Sprunggelenk drehten

keine       schwach       mäßig       stark       sehr stark
☐           ☐           ☐            ☐            ☐

P3. Ihren Fuß/Ihr Sprunggelenk ganz ausstreckten

keine       schwach       mäßig       stark       sehr stark
☐           ☐           ☐            ☐            ☐

P4. Ihren Fuß/Ihr Sprunggelenk ganz beugten

keine       schwach       mäßig       stark       sehr stark
☐           ☐           ☐            ☐            ☐

P5. Auf ebenem Boden gingen

keine       schwach       mäßig       stark       sehr stark
☐           ☐           ☐            ☐            ☐
Aktivitäten des täglichen Lebens
Die nachfolgenden Fragen beziehen sich auf Ihre körperliche Leistungsfähigkeit.
Hierunter verstehen wir Ihre Fähigkeit, sich selbständig zu bewegen bzw. sich selbst zu versorgen.
Für jede der nachfolgenden Aktivitäten geben Sie bitte das Ausmaß der Schwierigkeiten an, welche Sie aufgrund Ihres Fuß/Sprunggelenks innerhalb der letzten Woche erfahren haben.

Welche Schwierigkeiten hatten Sie in der letzten Woche als Sie z.B.:

A1. Treppen herunterstiegen
keine wenig einige große sehr große

A2. Treppen heraufstiegen
keine wenig einige große sehr große

A3. Vom Sitzen aufstanden
keine wenig einige große sehr große

Welche Schwierigkeiten hatten Sie in der letzten Woche als Sie z.B.:

A4. Aufrecht standen
keine wenig einige große sehr große
A5. Sich bückten um z.B. etwas vom Boden aufzuheben

keine  wenig  einige  große  sehr große

A6. Auf ebenem Boden gingen

keine  wenig  einige  große  sehr große

A7. Ins Auto ein- oder ausstiegen

keine  wenig  einige  große  sehr große

A8. Einkaufen gingen

keine  wenig  einige  große  sehr große

A9. Socken/Strümpfe anzogen

keine  wenig  einige  große  sehr große

A10. Vom Bett aufstanden

keine  wenig  einige  große  sehr große

A11. Socken/Strümpfe auszogen?

keine  wenig  einige  große  sehr große

A12. Im Bett lagen und sich drehten, ohne den Fuß/Sprunggelenk dabei zu beugen

keine  wenig  einige  große  sehr große

A13. In oder aus der Badewanne stiegen

keine  wenig  einige  große  sehr große

A14. Saßen

keine  wenig  einige  große  sehr große

A15. Sich auf die Toilette setzten oder aufstanden

keine  wenig  einige  große  sehr große
Chapter 16

A16. Schwere Hausarbeit verrichtet (schwere Kisten umstellen, Boden schrubben, etc)

keine       wenig       einige       große       sehr große
☐       ☐       ☐       ☐       ☐

A17. Leichte Hausarbeit verrichtet (kochen, Staub waschen, etc.)

keine       wenig       einige       große       sehr große
☐       ☐       ☐       ☐       ☐

Aktivitäten bei Sport und Freizeit

Die nachfolgenden Fragen beziehen sich auf Ihre körperliche Belastbarkeit im Rahmen von Sport- und Freizeitaktivitäten. Für jede der nachfolgenden Aktivitäten geben Sie bitte das Ausmaß der Schwierigkeiten an, welche Sie aufgrund Ihres Fuß/Sprunggelenks innerhalb der letzten Woche erfahren haben.

SP1. In die Hocke gingen

keine       wenig       einige       große       sehr große
☐       ☐       ☐       ☐       ☐

SP2. Rannten

keine       wenig       einige       große       sehr große
☐       ☐       ☐       ☐       ☐

SP3. Hüpften

keine       wenig       einige       große       sehr große
☐       ☐       ☐       ☐       ☐

SP4. Sich auf Ihrem kranken Fuß umdrehen

keine       wenig       einige       große       sehr große
☐       ☐       ☐       ☐       ☐

SP5. Sich hinknieten

keine       wenig       einige       große       sehr große
☐       ☐       ☐       ☐       ☐

Lebensqualität

Q1. Wie oft sind Sie sich Ihres Fuß/Sprunggelenksproblems bewusst?

nie       monatlich       wöchentlich       täglich       immer
☐       ☐       ☐       ☐       ☐
Q2. Haben Sie Ihre Lebensweise verändert, um eventuell Ihrem Fuß/Sprunggelenk schädigende Tätigkeiten zu vermeiden?

<table>
<thead>
<tr>
<th>gar nicht</th>
<th>wenig</th>
<th>etwas</th>
<th>stark</th>
<th>vollständig</th>
</tr>
</thead>
</table>

Q3. Wie sehr leiden Sie unter einem Mangel an Vertrauen und Zuversicht hinsichtlich Ihres Fuß/Sprunggelenks?

<table>
<thead>
<tr>
<th>gar nicht</th>
<th>wenig</th>
<th>etwas</th>
<th>stark</th>
<th>sehr stark</th>
</tr>
</thead>
</table>

Q4. Wie würden Sie insgesamt die Schwierigkeiten bewerten, die Sie durch Ihren Fuß/Ihr Sprunggelenk haben?

<table>
<thead>
<tr>
<th>keine</th>
<th>wenig</th>
<th>einige</th>
<th>große</th>
<th>sehr große</th>
</tr>
</thead>
</table>

Vielen Dank für die Beantwortung aller Fragen.
Fragebogen und Anleitung sind auf der folgenden Internetadresse zu finden: www.koos.nu