

Original article

<https://doi.org/10.18019/1028-4427-2023-29-3-253-264>

Linguistic and cultural adaptation of self-reported outcome questionnaires in foot and ankle-related pathologic conditions, FADI, FAAM and SEFAS, and their testing in Russian patients with different orthopedic pathology

A.A. Akulaev, A.A. Ivanov, T.I. Ionova, S.M. Efremov, T.P. Nikitina, K.A. Tishchenkov, A.A. Povaliy[✉]

Saint Petersburg State University Hospital, Saint Petersburg, Russian Federation

Corresponding author: Andrey A. Povaliy, povandrey16@yandex.ru

Abstract

Introduction Self-reporting of well-being by patients with disorders of the musculoskeletal system is of value and might be considered in decision making. The international orthopedic community recommends to use the questionnaires FADI, FAAM and SEFAS for assessing the function of the foot and ankle in different conditions, including changes after surgical treatment. **The aim of the study** was linguistic validation and cross cultural adaptation of the Russian versions of FADI, FAAM and SEFAS measures, including their testing in the population of patients with different foot and ankle disorders. **Methods** In accordance with current international recommendations, the linguistic and cultural adaptation of FADI, FAAM and SEFAS questionnaires included the procedure of their forward and back translations, testing of the Russian versions via patients' interviews, expert evaluation of Russian versions by specialists and decentering. **Results** Test versions of FADI, FAAM and SEFAS questionnaires in Russian were created. The tools were tested in the group of 40 patients with different foot and/or ankle joint disorders, including 10 athletes. The majority of items and questions of the tools were clear, comfortable and easily understood by patients. Based on the results of interviewing, an acceptable indicator of external validity of the Russian versions of the three questionnaires was established; according to the results of a survey by specialists (n = 14), their content validity was confirmed. Due to the fact that some questions of the questionnaires were difficult to understand for > 15% of patients, at the decentering stage, clarifying statements were made to the wording of two questions of the FADI and FAAM questionnaires and one question of the SEFAS questionnaire, what enabled to maximally adapt the new language versions of the questionnaires to the ethno-linguistic features of the Russian language patient population. **Discussion** Due to the fact that some items of the questionnaires caused misunderstanding and were difficult to understand, clarifications were made to the wording of these items. The final versions of the FADI, FAAM and SEFAS questionnaires were approved by the Expert Council in accordance with the results of decentering and on the basis of available recommendations. In general, good substantive validity of all three Russian versions of the questionnaires, FADI, FAAM and SEFAS, has been demonstrated. **Conclusion** The final Russian versions of the FADI, FAAM and SEFAS questionnaires were developed through linguistic validation and cross-cultural adaptation that are equivalent to their original versions and correspond to the ethno-linguistic features of the population. Their use in research and clinical practice is possible after assessment of psychometric properties of these tools.

Keywords: self-reported outcome measures, foot and ankle joint disorders, linguistic and cultural adaptation, quality of life

Acknowledgments: the authors thank Professor M. Coster (Sweden) for permission to develop the Russian version of the SEFAS questionnaire and methodological support in the framework of the language and cultural adaptation of the Russian version of this questionnaire.

For citation: Akulaev A.A., Ivanov A.A., Ionova T.I., Efremov S.M., Nikitina T.P., Tishchenkov K.A., Povaliy A.A. Linguistic and cultural adaptation of self-reported outcome questionnaires in foot and ankle-related pathologic conditions, FADI, FAAM and SEFAS, and their testing in Russian patients with different orthopedic pathology. *Genij Ortopedii*. 2023;29(3):253-264. doi: 10.18019/1028-4427-2023-29-3-253-264

INTRODUCTION

Assessment of the condition of patients with disorders of the musculoskeletal system, including effectiveness of their surgical treatment and rehabilitation, should be based not only on the results of clinical and radiological examinations, but also on the opinion of the patient regarding the impact of orthopaedic pathology on daily activity and quality of life [1-3]. The international guidelines for the management of patients with disorders of the musculoskeletal system include provisions on the expediency to conduct self-evaluation by the patient of his/her condition for assessing the effectiveness of treatment and consider the obtained results when making decisions [4, 5].

In the specialized literature related to diseases of the foot and ankle, a large number of tools for assessing disorders in patients with orthopedic pathology are described that feature different levels of evidence related to the appropriateness of their use in clinical practice and research [6-9]. It is important to note that information obtained using special questionnaires directly from patients can be of scientific and practical clinical value, provided that they are proven to be reliable, valid, and sensitive [10, 11]. Foreign reviews on the characteristics of self-assessment tools for patients with orthopedic pathology present questionnaires that are recommended for use in clinical trials and clinical

practice [6-8]. Among the tools that are recommended by the international orthopedic community for assessing the condition of the foot and/or ankle joint in various pathologies, including after surgical treatment, and successfully used for scientific and practical purposes, are such questionnaires as the Index of Foot and Ankle Dysfunction (Foot Ankle Disability Index, FADI), Foot and Ankle Ability Measure (FAAM) and Self-Reported Foot and Ankle Score (SEFAS) [12-17].

The FADI questionnaire was developed by Martin et al in 1999 and is designed to assess the function of the foot and ankle and its limitations associated with orthopedic diseases [12-14]. The questionnaire consists of two parts: the main part of the FADI includes 26 items divided into two scales: 22 items are related to the daily activity scale, 4 items to the pain scale. The second part of the questionnaire (FADI-Sport) includes 8 items combined into a scale of sports activity. Answers to each question are assessed on a Likert scale from zero to four points; the maximum number of points according to the FADI questionnaire is 104. The best score (104) corresponds to the complete absence of any difficulties in daily activities and the absence of pain; the minimum score (0) corresponds to the worst possible condition, i.e. severe limitation in walking and daily activities as well as severe pain.

The FAAM questionnaire was developed on the basis of the FADI questionnaire and is a region-specific tool for a comprehensive assessment of foot and ankle function in patients with a wide range of ankle and foot disorders [15, 16]. Similar to the FADI questionnaire, it is divided into 2 separate scales: daily activity (includes 21 items, similar to FADI) and sports activity (consists of 8 items). It is missing 5 questions included in the FADI questionnaire: one question on foot/ankle function during sleep and 4 questions on pain. Similar to FADI, responses to each item are scored on a Likert scale from zero to four points. The summary score on the questionnaire is divided by the highest potential score and then multiplied by 100 to get the FAAM score, which ranges from 0 to 100. The sports activity scale is scored in a similar way. As with the Daily Activity Scale, the total score on this scale is divided by the highest possible score and multiplied by 100; the maximum score is 32. A higher score corresponds to a higher level of foot and ankle physical function for both scales.

The SEFAS questionnaire was developed by Coster et al in 2007 on the basis of a general questionnaire for assessing the function of the ankle joint and tested in a population of patients with its inflammatory

diseases [17]. Good psychometric properties of the instrument were demonstrated. The questionnaire contains 12 items, each of which has 5 possible answers. The structure of the questionnaire makes it possible to assess pain, function, and limitation of function, which are not allocated to separate scales. Responses to each of the 12 items are assessed on a Likert scale from zero to four points, with 0 points corresponding to the maximum impairment of function, 48 points to the absence of dysfunction of the ankle and foot. Currently, the international orthopedic community uses the SEFAS questionnaire to form a register of patients with various diseases of the foot and ankle joint.

We should note that the national language version of the questionnaire can be used in research and clinical practice, provided that it is translated, language and culturally adapted, and tested in a focus population of patients. These procedures are carried out in accordance with international standards [19-22]. Next, it is necessary to check the psychometric properties of the language version of the questionnaire. The linguistic and cultural adaptation of the instrument and its approbation are carried out not only by specialists, but also require the participation of patients. The quality of this stage further determines the psychometric properties of the instrument. Currently, there is information on the development, adaptation and validation of the Russian version of the FAAM questionnaire in a sample of patients with ankle fractures and dislocations [23]. The use of the Russian version of FAAM in the process of complex treatment and rehabilitation to assess foot function in patients with osteoarthritis of the first metatarsophalangeal joint was demonstrated [24, 25]. However, testing of the instrument, including interviewing patients and specialists, as well as validation of the Russian version of the questionnaire in the group of patients with other diseases of the ankle and foot, as well as separately in the group of athletes, was not carried out. There are currently no Russian versions of the FADI and SEFAS questionnaires. The development of Russian versions of the FAAM, FADI and SEFAS questionnaires in accordance with modern international standards will create an evidence-based basis for applying the method of patient self-assessment of their condition to determine the effectiveness of treatment in orthopedics.

The **purpose** was to carry out linguistic and cultural adaptation of the FADI, FAAM and SEFAS questionnaires for assessing the condition of the foot and ankle joint in various orthopedic pathologies and to test the Russian versions of the questionnaires on the domestic patient population.

MATERIALS AND METHODS

The study was carried out in two stages (Fig. 1). The first stage was a multi-stage procedure for translating the FADI, FAAM and SEFAS questionnaires into Russian with the creation of Russian test versions of

the questionnaires; the second was approbation of the translated Russian test versions. Approbation consisted in testing questionnaires in a focused population of patients.

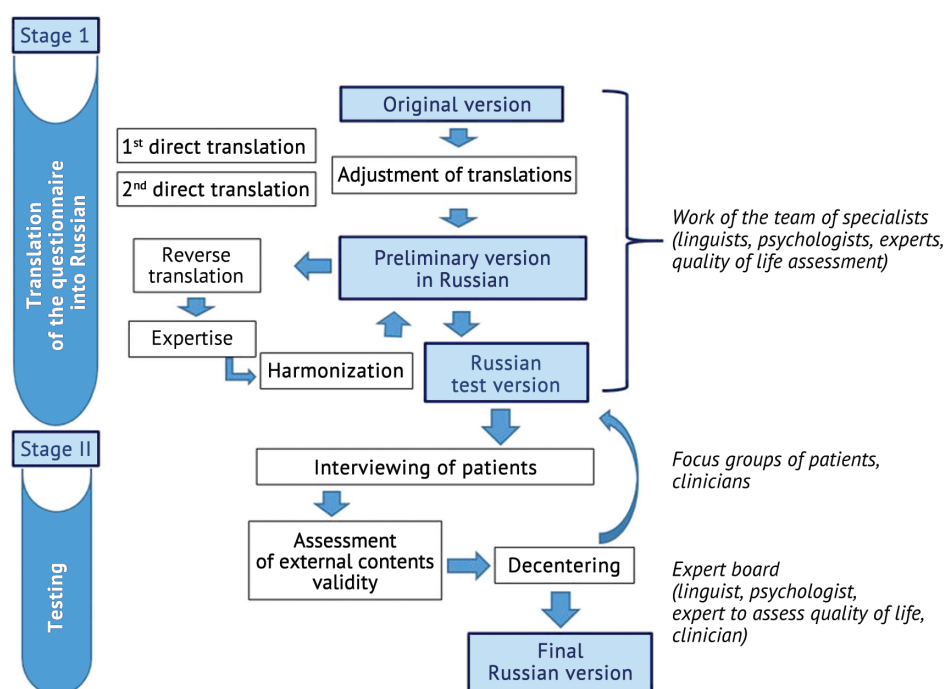


Fig. 1 Diagram of linguistic and cultural adaptation of a questionnaire

The protocol for the development of Russian versions of the three questionnaires was approved by the Biomedical Ethics Committee of the Pirogov Clinic for High Medical Technologies at St. Petersburg State University (extract from protocol No. 07/22, dated 07/07/2022). The study was conducted from July to November 2022. Before starting the work on creating the Russian versions of the questionnaires, permission was obtained from the author and developer of the SEFAS questionnaire, M. Coster (Sweden), to create its Russian version. In accordance with the available official information on the use of the FADI and FAAM questionnaires, obtaining permission from the authors for their use is not required.

Testing of the questionnaires within the framework of the language and cultural adaptation of their Russian versions was carried out on the basis of the Department of Traumatology and Orthopedics of the Pirogov Clinic for High Medical Technologies at the St. Petersburg State University (St. Petersburg). The testing procedure included patients who underwent planned surgical treatment for various pathologies of the foot and ankle joint. The specialists from the Department of Traumatology and Orthopedics also took part in the testing. They filled out a special questionnaire to obtain the opinion of specialists regarding the suitability, information content, and convenience of the tested questionnaires. The conditions for participation of patients in the tests were as follows: age 18 years and older, diagnosis of foot/ankle pathology, planned foot/ankle surgery, patient's ability to complete questionnaires. The patients filled in one of the questionnaires (FAAM, FADI or SEFAS), as well as were interviewed by a specialist. Prior to the interview,

each patient provided written informed consent to participate in the interview. During the interview, the doctor, in accordance with a specially designed form, asked the patient to answer the following questions for each item of the test questionnaire:

- Is the wording of the paragraph/question clear/unclear?
- Did/did the wording of the paragraph/question cause/cause discomfort?
- Was it easy/difficult to rate the answer over the past week?

Also, the patient had to express his/her general opinion on the questionnaire.

As part of the patient interviews, the time required to complete the FADI, FAAM, and SEFAS questionnaires was determined. Based on the results of the interview, the external (face) validity of the instrument was determined. To do this, we analyzed the proportion of patients who reported comprehension of the items/questions of the questionnaire and the absence of inconvenience (discomfort) when choosing an answer to a question, as well as the ease of assessing the conditions indicated in the item/question. It was assumed that in the event that more than 15 % of respondents mark the same item/question as difficult to understand, causing inconvenience or difficulty in assessing, this item/question will require further development and, possibly, a change in its wording. The final Russian versions of the questionnaires were approved by the Expert Council, taking into account the following types of wording equivalence: semantic, idiomatic, empirical and conceptual.

According to the questionnaires of specialists, the content validity of the questionnaires was assessed. To do this, we determined the proportion of specialists who noted the clarity, informativeness, suitability and ease of use of each of the tools for assessing dysfunction of the foot and ankle joint in patients

with orthopedic pathology. The general impression of specialists about the proposed method for assessing the dysfunction of the foot and ankle joint in patients was also evaluated. The final examination of the instruments was carried out on the basis of international recommendations [20, 21].

RESULTS

Translation of the questionnaires FADI, FAAM and SEFAS into Russian

Direct translation of each of the questionnaires was done by two independent translators, native Russian speakers with knowledge in the field of medicine and experience in translating special medical literature. On the basis of two variants of direct translation, based on the results of the examination, preliminary versions of the instruments in Russian were formulated.

Given that the Russian version had already been developed for the FAAM questionnaire, it was also used at the stage of approval of translations when creating a new preliminary version of this questionnaire in Russian. In two items of the FADI and FAAM questionnaires, as well as six items of the SEFAS questionnaire, when choosing the optimal wording in the preliminary Russian versions of these questionnaires, adjustments were made to ensure their better linguistic and cultural relevance (Appendices 1 and 2). In particular, in the FADI and FAAM questionnaires, the wording "lateral movements" was changed to "side movements (for example, side step)". Also, in the context of the questionnaires, the word "questions" was changed to "points". In addition, in all the items of the FADI and FAAM questionnaires, the imperfect form of the verb is used, as in the original

versions, in order to maintain a unified style, a change was made to item No. 9: instead of "Step over the curbs of the sidewalk" – "Overcome the curbs of the sidewalk". The following adjustments were made during the development of the preliminary version of the SEFAS questionnaire. First, the name of the tool has been clarified by adding the word "condition" to more correctly reflect its meaning in Russian – "Self-reported Condition of the Foot and Ankle". Second, the patient's name is supplemented with a patronymic, which is more common for the respondent in the Russian ethnolinguistic environment. In addition, an indication of the limb whose function is impaired (right or left leg) is included. An important change that reflects the stage of adaptation of the SEFAS questionnaire to the new ethnolinguistic environment is the adjustment of the instructions – the grading of the scale for assessing the severity of anxiety is represented by categories from 0 to 4 points instead of from 1 to 5 points, which is more familiar to perception (Appendix 2). Also, for a more accurate translation, the phrasing that is more understandable in Russian of some positions was chosen: "most days" ("most nights") – "almost every day" ("almost every night"); "with little difficulty" – "without much difficulty", "with moderate difficulty" – "with difficulty".

Appendix 1 Characteristics of the items of the FADI and FAAM questionnaires, which were amended at the stage of their preliminary versions in Russian

English version	Preliminary Russian version
Please answer every question with one response that most closely describes your condition within the past week	Пожалуйста, для каждого пункта в опроснике отметьте лишь один вариант ответа, который наиболее точно описывает Ваше состояние на прошлой неделе
Cutting / lateral movements	Боковые / скрестные движения (например, приставной шаг)

Appendix 2 Characteristics of the items of the SEFAS questionnaire, which were amended at the stage of its preliminary version in Russian

English version	Preliminary Russian version
Self-reported foot and ankle score (SEFAS)	Самостоятельная оценка состояния стопы и голеностопного сустава (SEFAS)
First name	Имя, отчество
Side R / L	Нога правая / левая
We would like you to answer the 12 questions below. Each question is graded from 0-4. 4 = the mildest or least troublesome and 0 = the most severe or most troublesome	Просим Вас ответить на 12 вопросов, которые представлены ниже. Каждый вопрос оценивается по шкале от 0 до 4, где 4 – это наименьшее беспокойство, а 0 – наибольшее беспокойство
With little difficulty	Без особых трудностей
With moderate difficulty	С затруднением

After the reverse translation was carried out by an expert committee with the participation of a linguist, a psychologist and experts in the field of quality of life research, the translations were harmonized, discrepancies were searched for between the original versions of the questionnaires and their translation. At this stage, no significant differences were identified. As a result of this stage, the Russian test versions of the FADI, FAAM and SEFAS questionnaires were approved.

Testing of the Russian versions of FADI, FAAM and SEFAS

The Russian versions of the FADI, FAAM and SEFAS questionnaires were tested as part of their approbation in a focus patient population and included an interview procedure involving 40 patients with various orthopedic pathologies who needed surgical treatment. The list of orthopedic pathologies in patients and indicated by doctors for approbation of testing questionnaires included combined flat feet of the right or left foot, outward deviation of the first toe, inward deviation of the fifth toe, metatarsalgia, hammer toe deformity, and other types of pathology.

Focus groups of patients during the interview procedure included, respectively, 18 patients for testing the Russian test version of FADI (mean age of patients 44.4 ± 12.2 years; 2 men, 16 women; including 10 patients – professional athletes), 11 patients for approbation of the Russian test version of FAAM (mean age 45.9 ± 11.6 years, 1 man, 10 women) and 11 patients for approbation of the Russian test version of SEFAS (mean age 55.8 ± 12.6 years; 2 men, 9 women).

An examination of the results of interviewing patients was carried out on the basis of information from the completed questionnaires and interview forms on the basis of the "from particular to general" principle.

The results of interviewing patients who completed the Russian test versions of the FADI, FAAM and SEFAS questionnaires are presented, respectively, in Table 1. The average time to complete the FAAM questionnaire was 12 minutes (3-15 minutes), FADI – 8 minutes (5-15 minutes), SEFAS – 5 minutes

(3-8 minutes). According to the results of the interview, all patients noted a general positive impression of the questionnaires, the clarity of the words used in the questionnaire, and the absence of repetitions. Also, all patients indicated that the questionnaire they completed was easy, readable and convenient for them. Some of the patients who completed the FADI pointed in the comments that "this questionnaire can help the doctor to be more attentive to the patient" and "it is always useful to collect information with it".

All patients who completed the FADI questionnaire, as well as all patients who completed the SEFAS, noted that they did not encounter incomprehensible words, repetitive wording and unusual activities in these questionnaires. Four patients who completed the FADI (22.2 %) and one patient who completed the SEFAS (9.1 %) indicated that the questionnaire contained incomprehensible expressions/phrases. Regarding the FAAM questionnaire, the majority of patients (54 %) indicated that they understood all questions; five patients (46 %) indicated that the questionnaire contained expressions/phrases that were not understandable to them.

Out of 26 points of the FADI questionnaire, 7 items caused difficulties in understanding, the presence of discomfort and difficulties in assessing these aspects – No. 1 (Standing); No. 8 (Walking on an uneven ground); No. 9 (Stepping up and down curbs); No. 10 (Squatting), No. 18 (Everyday activity), No. 20 (Light to moderate work (standing, sitting)), No. 23 (General level of pain) (Table 2). Thus, out of the 26 analyzed points of the FADI questionnaire, 11 % of the respondents noted a maximum of 2 points – No. 18 and No. 23 – as difficult to understand.

Of the 21 items of the FAAM questionnaire, 5 items caused difficulties in understanding, discomfort and difficulties in assessing the points: No. 1 (Standing); No. 5 (Walking down the hill); No. 8 (Walking on uneven ground); No. 9 (Stepping up and down curbs); No. 18 (Personal care) (Table 3). Thus, out of 5 analyzed points, more than 15 % of respondents (18 %) indicated two points, No. 1 and No. 9, as difficult to understand.

Table 1

Information on the number of points in the FADI, FAAM and SEFAS questionnaires that caused problems for patients

Questionnaire	Understanding of the formulated point/question		Discomfort from a formulaed point/question		Easiness to assess the point for the period indicated	
	Understandable Item/ questions	Non-understandable item/questions	No discomfort	Discomfort	Easy	Difficult
FADI, number, n (%)	11 (61)	7 (39)	11 (61)	7 (39)	11 (61)	7 (39)
FAAM, number, n (%)	16 (76)	5 (24)	16 (76)	5 (24)	16 (76)	5 (24)
SEFAS, number, n (%)	11 (92)	1 (8)	10 (83)	2 (17)	10 (83)	2 (17)

Table 2

Questions of FADI questionnaire that caused difficulties for patients

Question	Patient 1	Patient 2	Patient 3	Patient 4
1. <i>Standing</i>	–	–	–	Not understandable, causes discomfort, difficult to assess
8. <i>Walking on uneven ground</i>	–	–	–	Not understandable, causes discomfort, difficult to assess
9. <i>Stepping up and down curbs</i>	–	–	Not understandable, causes discomfort, difficult to assess	–
10. <i>Squatting</i>	–	–	–	Not understandable, causes discomfort, difficult to assess
18. <i>Personal care</i>	Not understandable, causes discomfort, difficult to assess	–	Not understandable, causes discomfort, difficult to assess	–
20. <i>Light to moderate work (standing, walking)</i>	–	–	–	Not understandable, causes discomfort, difficult to assess
23. <i>General level of pain</i>	Not understandable, causes discomfort, difficult to assess	Not understandable, causes discomfort, difficult to assess	–	–

Table 3

Questions of FAAM questionnaire that caused difficulties for patients

Questions	Patient 1	Patient 2	Patient 3
1. <i>Standing</i>	Causes discomfort, difficult to assess	Not understandable, causes discomfort, difficult to assess	–
5. <i>Walking down hill</i>	–	–	Not understandable, causes discomfort, difficult to assess
8. <i>Walking on uneven ground</i>	Not understandable, causes discomfort, difficult to assess	–	–
9. <i>Walking up and down curbs</i>	–	–	Not understandable, causes discomfort, difficult to assess
18. <i>Personal care</i>	–	–	Not understandable, causes discomfort, difficult to assess

The sports activity scale did not cause difficulties for any of the patients who completed the FAAM questionnaire, and caused difficulties in 2 patients (11.1 %) who completed the FADI questionnaire. Of these, one patient found not understandable, causing discomfort and difficulties in assessing the wording of 2 points of the questionnaire (jumping and low-impact activity), another patient found the same shortcomings in the wording of one point (ability to perform activity with your normal technique).

When filling out the FADI questionnaire, all patients (100 %) noted that the self-reporting of the *functional state during sport activities* was understandable, easy and did not cause any discomfort. As for the self-assessment of the *current level of the functional state* according to the FAAM questionnaire, for 82 % of the patients who filled out this questionnaire, this assessment was easy, for 73 % of the patients it was understandable and did

not cause discomfort; self-assessment of the *functional state during sports activities* was reported by all patients (100 %) as understandable, easy and not causing discomfort.

The method of final self-assessment (In general, how would you rate your current state of function?) was marked by all patients who completed both FADI and FAAM as easy, understandable and not causing discomfort.

Regarding the results of testing the Russian version of SEFAS, out of 12 points of the questionnaire, only point No. 1 caused difficulties in understanding ("How would you describe the pain that you usually have from the foot/ankle in question?"). Two points of the questionnaire were considered by the interviewees to cause discomfort and difficulty in assessing: question 1 ("How would you describe the pain you usually have from the foot/ankle in question?") and question 2

("For how long have you been able to walk before severe pain arises from the foot/ankle in question?").

Difficulties with understanding, discomfort and difficulty in answering question 1 of the SEFAS questionnaire occurred in two patients (18.2 % of respondents). The wording of point 2 caused discomfort in 3 patients (27.3 %), it was not easy for one patient (9.1 %) to complete the task of this question (Table 4). Thus, out of 12 analyzed points, more than 15 % of respondents (18.2 % and 27.3 %, respectively) pointed as question 1 as difficult to understand, causing discomfort and difficulty in answering, and question 2 as causing discomfort.

The wording of the additional questions of the SEFAS questionnaire (If you had foot or ankle surgery at another medical institution, indicate the approximate date and name of the medical institution. What was the operation?; Other comments?) was understandable for 100 % of the respondents and did not cause any discomfort.

Separately, the results of a survey of orthopedic traumatologists were analyzed. It was attended by 14 doctors. The average age of specialists was 36.9 ± 8.1 years (27-52 years), including 11 men and 3 women. Their average professional experience was 11.3 ± 6.7 years (1-23 years). All of them (100 %) noted a positive impression of all three questionnaires. The majority indicated that they are clear, usable, convenient, optimal, and time-saving tools for the clinician to assess foot and ankle dysfunction in patients. They also noted that they are ready to use these tools in their daily practice.

Decentering

According to the data obtained from the FADI and FAAM questionnaires, only points 1 and 9 (Standing and Stepping up and down curbs) needed to be improved (one patient from the total of completed FADI and two patients from the total who completed FAAM noted these points as causing difficulties and inconvenience in the assessment). The expert commission considered the available direct translations of point 1 and came to the conclusion that it was necessary to specify it, indicating in brackets one of the wordings of the direct

translation – "to be in a standing position", and in order to observe idiomatic equivalence, it was decided to add a clarification to point 9 and indicate in brackets "curb". The rest of the points, taking into account the borderline number of patients who indicated difficulties (less than 15 % of those who filled out the FADI and FAAM questionnaires), were adopted by the Expert board without clarifications.

According to the data obtained during the testing of the SEFAS questionnaire, only question 2 needed to be improved (For how long have you been able to walk before the severe pain arises from the foot/ankle in question?). Regarding this question, 3 patients (27.3 %) noted that its wording causes discomfort and 1 patient had difficulty answering it. Therefore, the Expert Board decided to introduce a rephrasing in one of the options for answering this question (no pain for the first 30 minutes). To facilitate understanding of the question and simplify the choice of answer, the following clarification has been made: pain appears later than 30 minutes. Regarding the first question (How would you describe the pain you usually have from the foot/ankle joint in question?), that was rated by two patients (18.2 %) as not understandable, inconvenient and causing discomfort to assess, the Expert Board, after consultation with the clinicians, decided that there was no need to adjust this question (and the answer options to it). The comments of the patients were regarded by the clinicians as related to the individual characteristics of these patients, and not to translation errors. The remaining points, taking into account the fact that the number of patients, who indicated difficulties related to them, was less than 15 % of the number of those who completed the questionnaire, did not require adjustment.

Due to the fact that only clarifications were made to the evaluation points of the FADI, FAAM and SEFAS questionnaires and they did not change, the interview results were considered satisfactory and additional interviews of patients were not required. Based on the results of the final examination, the Expert Board approved the final Russian versions of the FADI, FAAM and SEFAS questionnaires (Appendices 3, 4, 5).

Table 4
Points of SEFAS questionnaire that caused difficulties for patients

Question	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
1. How would you describe the pain you usually have from the foot/ankle in questions?	–	Not understandable, causes discomfort, difficult to assess	–	Not understandable, causes discomfort, difficult to assess	–
2. To walk on even ground	Not understandable, causes discomfort, difficult to assess	–	Causes discomfort	–	Causes discomfort

Appendix 3. Final Russian version of FADI questionnaire

Оценка нарушений функции стопы и голеностопного сустава (FADI)

ФИО врача _____ ФИО пациента _____

Пожалуйста, для **каждого пункта в опроснике** отметьте лишь **один вариант ответа**, который наиболее точно описывает **Ваше состояние на прошлой неделе**.

Если **выполнение действия, о котором Вас спрашивают**, затруднено по причинам, не имеющим отношение к проблеме со стопой / лодыжкой, отметьте галочкой ответ «Неприменимо» (Н/П).

	Без затруднений	Лёгкие затруднения	Умеренные затруднения	Серьёзные затруднения	Невозможно выполнить	Н/П
1. Стоять (находиться в положении стоя)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Ходить по ровной поверхности	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Ходить босиком по ровной поверхности	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Идти в гору	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Спускаться под горку	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Подниматься по лестнице	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Спускаться по лестнице	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Ходить по неровной поверхности	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Преодолевать бордюр тротуара (поребрик)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Приседать	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Спать	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Вставать на носки	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Начинать движение	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Ходить не более 5 минут	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Ходить в течение 10 минут	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Ходить более 15 минут	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Работа по дому	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Повседневная активность	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Уход за собой	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Лёгкие и умеренно тяжёлые нагрузки (стоять, сидеть)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Тяжёлые нагрузки (тянуть, толкать, подниматься, поднимать тяжести)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Активный отдых, развлечения	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Нет боли	Незначительная	Умеренная	Сильная	Невыносимая	Н/П
23. Общий уровень боли	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Боль во время отдыха	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Боль при выполнении повседневной активности	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Боль сразу после пробуждения	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

БОЛЬШОЕ СПАСИБО ЗА ТО, ЧТО ОТВЕТИЛИ НА ВСЕ ВОПРОСЫ ЭТОЙ АНКЕТЫ.

Оценка нарушений функции стопы и голеностопного сустава, общий балл

Оценка нарушений функции стопы и голеностопного сустава (FADI)

Шкала спортивной активности

Для каждого из следующих вопросов отметьте, насколько серьёзные затруднения из-за стопы / лодыжки Вы испытываете при занятии спортом:

	Без затруднений	Лёгкие затруднения	Умеренные затруднения	Серьёзные затруднения	Невозможно выполнить	Н/П
Бег	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Прыжки	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Приземления	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Быстро начинать движение и быстро останавливаться	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Боковые / скрестные движения (например, приставной шаг)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Легкие нагрузки	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Возможность заниматься спортом как обычно, по обычной программе	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Возможность заниматься спортом столько времени, сколько хотелось бы	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Как бы Вы оценили свой текущий уровень функционального состояния во время занятий спортом от 0 до 100, где 100 – состояние до возникновения проблем со стопой и голеностопным суставом, 0 – невозможность выполнения ни одного из обычных ежедневных действий?

☐ ☐ ☐ 0%

В целом, как бы Вы оценили свой уровень функционального состояния в настоящее время?

☐ Нормальный
☐ Почти нормальный
☐ Сниженный
☐ Значительно сниженный

Appendix 4. Final Russian version of FAAM questionnaire

Оценка функционального состояния стопы и голеностопного сустава (FAAM)

Шкала повседневной активности

Дата заполнения ____ / ____ / 20__ Дата рождения ____ / ____ / ____

ФИО _____ Балл: _____

Пожалуйста, для **каждого пункта в опроснике** отметьте **лишь один вариант** ответа, который наиболее точно описывает Ваше состояние на прошлой неделе.

Если выполнение действия, о котором Вас спрашивают, затруднено по причинам, не имеющим отношение к проблеме со стопой / лодыжкой, отметьте галочкой ответ «Неприменимо» (Н/П).

	Без затруднений	Лёгкие затруднения	Умеренные затруднения	Серьёзные затруднения	Невозможно выполнить	Н/П
1. Стоять (находиться в положении стоя)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Ходить по ровной поверхности	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Ходить босиком по ровной поверхности	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Идти в гору	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Спускаться под горку	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Подниматься по лестнице	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Спускаться по лестнице	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Ходить по неровной поверхности	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Преодолевать бордюр тротуара (поребрик)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Приседать	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Вставать на носки	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Начинать движение	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Ходить не более 5 минут	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Ходить в течение 10 минут	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Ходить более 15 минут	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Насколько серьёзные затруднения из-за стопы/лодыжки Вы испытываете при выполнении следующих действий:

	Без затруднений	Лёгкие затруднения	Умеренные затруднения	Серьёзные затруднения	Невозможно выполнить	Н/П
16. Работа по дому	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Повседневная активность	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Уход за собой	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Лёгкие и умеренно тяжёлые нагрузки (стоять, сидеть)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Тяжёлые нагрузки (тянуть, толкать, подниматься, поднимать тяжести)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Активный отдых, развлечения	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Как бы Вы оценили свой текущий уровень функционального состояния при выполнении обычных ежедневных действий от 0 до 100, где 100 – состояние до возникновения проблем со стопой и голеностопным суставом, 0 – невозможность выполнения ни одного из обычных ежедневных действий?

☐☐☐.0%

Оценка функционального состояния стопы и голеностопного сустава (FAAM)

Шкала спортивной активности

Для каждого из следующих вопросов отметьте, насколько серьёзные затруднения из-за стопы / лодыжки Вы испытываете при занятии спортом:

	Без затруднений	Лёгкие затруднения	Умеренные затруднения	Серьёзные затруднения	Невозможно выполнить	Н/П
Бег	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Прыжки	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Приземления	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Быстро начинать движение и быстро останавливаться	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Боковые / скрестные движения (например, приставной шаг)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Легкие нагрузки	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Возможность заниматься спортом как обычно, по обычной программе	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Возможность заниматься спортом столько времени, сколько хотелось бы	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Как бы Вы оценили свой текущий уровень функционального состояния во время занятий спортом от 0 до 100, где 100 – состояние до возникновения проблем со стопой и голеностопным суставом, 0 – невозможность выполнения ни одного из обычных ежедневных действий?

☐☐☐.0%

В целом, как бы Вы оценили свой уровень функционального состояния в настоящее время?

☐ Нормальный ☐ Почти нормальный ☐ Сниженный ☐ Значительно сниженный

Appendix 5. Final Russian version of SEFAS questionnaire

Самооценка состояния стопы и голеностопного сустава (SEFAS)

До операции: ☐После операции: ☐

Фамилия: _____

Нога правая ☐ левая ☐

Имя, отчество: _____

Дата рождения: _____ Дата операции (если применимо): _____

Медицинское учреждение: _____

Просим Вас ответить на 12 вопросов, которые представлены ниже. Каждый вопрос оценивается по шкале от 0 до 4, где **4 – это наименьшее беспокойство, а 0 – наибольшее беспокойство.**

Пожалуйста, отметьте галочкой один квадрат напротив ответа, который лучше всего передает Ваше состояние **за последние 4 недели.**

Дата заполнения: _____

☐ Д ☐ Д ☐ М ☐ М ☐ Г ☐ Г ☐ Г ☐ Г

1. Как бы Вы описали боль, которую Вы обычно испытываете в стопе/голеностопном суставе, о которых идет речь? 4 <input type="checkbox"/> Нет боли 3 <input type="checkbox"/> Очень слабая 2 <input type="checkbox"/> Слабая 1 <input type="checkbox"/> Умеренная 0 <input type="checkbox"/> Сильная	7. Могли ли Вы подняться на один лестничный пролет? 4 <input type="checkbox"/> Да, легко 3 <input type="checkbox"/> Без особых трудностей 2 <input type="checkbox"/> С затруднением 1 <input type="checkbox"/> С сильным затруднением 0 <input type="checkbox"/> Нет, было совсем невозможно
2. Как долго Вы могли ходить прежде, чем возникает сильная боль в стопе/голеностопном суставе, о которых идет речь? 4 <input type="checkbox"/> Нет боли первые 30 минут (боль появляется позже, чем через 30 минут) 3 <input type="checkbox"/> Боль появляется после 16-30 минут 2 <input type="checkbox"/> Боль появляется после 5-15 минут 1 <input type="checkbox"/> Только вокруг дома 0 <input type="checkbox"/> Не мог/ла ходить из-за сильной боли	8. Беспокоила ли Вас боль в стопе/голеностопном суставе, о которых идет речь, ночью в постели? 4 <input type="checkbox"/> Нет 3 <input type="checkbox"/> Только одну или две ночи 2 <input type="checkbox"/> Несколько ночей 1 <input type="checkbox"/> Почти каждую ночь 0 <input type="checkbox"/> Каждую ночь
3. Могли ли Вы ходить по неровной поверхности? 4 <input type="checkbox"/> Да, легко 3 <input type="checkbox"/> Без особых трудностей 2 <input type="checkbox"/> С затруднением 1 <input type="checkbox"/> С сильным затруднением 0 <input type="checkbox"/> Совсем не мог/ла	9. Насколько сильно боль в стопе/голеностопном суставе, о которых идет речь, повлияла на привычный Вам активный досуг? 4 <input type="checkbox"/> Совсем нет 3 <input type="checkbox"/> Немного 2 <input type="checkbox"/> Умеренно 1 <input type="checkbox"/> Сильно 0 <input type="checkbox"/> Полностью
4. Приходилось ли Вам использовать ортопедические стельки, стельки под пятку или специальную обувь? 4 <input type="checkbox"/> Никогда 3 <input type="checkbox"/> Иногда 2 <input type="checkbox"/> Часто 1 <input type="checkbox"/> Большую часть времени 0 <input type="checkbox"/> Всегда	10. Опухла ли Ваша стопа? 4 <input type="checkbox"/> Совсем нет 3 <input type="checkbox"/> Иногда 2 <input type="checkbox"/> Часто 1 <input type="checkbox"/> Большую часть времени 0 <input type="checkbox"/> Всегда
5. Насколько сильно боль в стопе/голеностопном суставе, о которых идет речь, мешала Вашей повседневной активности, включая домашние дела и хобби? 4 <input type="checkbox"/> Совсем нет 3 <input type="checkbox"/> Немного 2 <input type="checkbox"/> Умеренно 1 <input type="checkbox"/> Сильно 0 <input type="checkbox"/> Полностью	11. После еды (сидя за столом) насколько больно Вам было подняться со стула из-за стопы/голеностопного сустава, о которых идет речь? 4 <input type="checkbox"/> Совсем не больно 3 <input type="checkbox"/> Немного больно 2 <input type="checkbox"/> Терпимо 1 <input type="checkbox"/> Очень больно 0 <input type="checkbox"/> Невыносимо больно
6. Хромали ли Вы при ходьбе из-за проблемы со стопой/голеностопным суставом, о которых идет речь? 4 <input type="checkbox"/> Нет 3 <input type="checkbox"/> Только один или два дня 2 <input type="checkbox"/> Несколько дней 1 <input type="checkbox"/> Почти каждый день 0 <input type="checkbox"/> Каждый день	12. Испытывали ли Вы внезапную сильную боль (стреляющую, колющую, режущую) или спазмы в стопе/голеностопном суставе, о которых идет речь? 4 <input type="checkbox"/> Нет 3 <input type="checkbox"/> Только один или два дня 2 <input type="checkbox"/> Несколько дней 1 <input type="checkbox"/> Почти каждый день 0 <input type="checkbox"/> Каждый день

Если у Вас была операция на стопе или голеностопном суставе в другом медицинском учреждении, укажите примерную дату и название медицинского учреждения.

Дата: _____ Медицинское учреждение: _____

Какая была операция? _____

Другие комментарии? _____

БЛАГОДАРИМ ВАС ЗА ОТВЕТЫ

DISCUSSION

Currently, questionnaires have been widely used for a comprehensive assessment of the condition of patients with disorders of the musculoskeletal system as well as to determine the effectiveness of surgical treatment and rehabilitation in orthopedic pathology, which are filled in by the patients themselves. This study is the result of translation, cultural and linguistic adaptation of the FADI, FAAM and SEFAS questionnaires, which are recommended by the international orthopedic community for assessing the condition of the foot and/or ankle joint in various pathologies. Also, these questionnaires were tested on a group of 40 patients with various orthopedic pathologies in need of surgical treatment. There was 25 % of professional athletes among those patients.

The procedure for language and cultural adaptation of the FADI, FAAM and SEFAS questionnaires was carried out on the basis of international recommendations [20, 21] and included the following:

- direct translation of the questionnaire in accordance with international standards from English into Russian, creation of two versions of the direct translation;
- coordination and expert evaluation of translations, creation of a preliminary version in Russian;
- reverse translation, harmonization of translations and creation of a test version in Russian;
- interviewing patients, including those involved in professional sports activities, as well as questioning specialists to test questionnaires;
- making changes to the test versions of the questionnaires based on the results of decentering;
- carrying out final examination of all translations and decentering results, creation of final versions of questionnaires in Russian.

Testing of the questionnaires included the following: determining the time required to complete the questionnaires, assessing external validity based on patients' interviews, and assessing content validity based on questioning specialists.

The average time to complete the FAAM questionnaire was 12 minutes, FADI - 8 minutes, SEFAS - 5 minutes, which corresponds to the available data for versions of these tools in other languages [12–17].

In accordance with the results of patients' interviews, it was found that the FADI, FAAM and SEFAS questionnaires are characterized by good indicators of external validity. The majority of patients, as well as the athletes participating in the interviews, indicated that, in general, the points of the questionnaires are understandable, do not

cause discomfort and difficulties in assessing the aspects of life that were contained in the points of the proposed tools. Due to the fact that some points of the questionnaires caused misunderstanding and were difficult to understand, clarifications were made to these points. The final versions of the FADI, FAAM and SEFAS questionnaires were approved by the Expert Board in accordance with the results of decentering and based on the available recommendations [20, 21]. The approval of the final language version of the questionnaire provides for the assessment of four types of wording equivalence [26]:

- semantic equivalence (meanings of words, words reflect the same concepts, or there is a "second meaning" to the question),
- idiomatic equivalence (equivalence of expressions, their correspondence to those used in the language into which the questionnaire is translated),
- empirical equivalence (some activities or activities that are asked about in the original version may not be generally accepted in another culture);
- conceptual equivalence (the same words may have different conceptual meanings in different cultures).

When creating the final Russian versions of the FADI, FAAM and SEFAS questionnaires, the above types of equivalence were considered and taken into account. As a result, the external validity characteristics of the Russian versions of the FADI, FAAM, and SEFAS questionnaires corresponded to those of the original instruments [12, 15, 17].

As part of the FADI, FAAM and SEFAS approbation, their content validity was assessed. Content validity characterizes its informative value, suitability, usability and "comprehensiveness", i.e. a measure of how well the questionnaire (and each of its components, scales, and items) covers all aspects of what it is intended to measure. It was determined on the basis of the results of a survey of orthopedic traumatologists. In general, good content validity was demonstrated for all three Russian versions of the FADI, FAAM, and SEFAS questionnaires.

As a result of linguistic and cultural adaptation of the FADI, FAAM and SEFAS questionnaires, as well as their testing on the domestic patient population, their final Russian versions have been developed. The FADI, FAAM, and SEFAS questionnaires can be used in domestic traumatology and orthopedics for scientific and practical purposes after the next stage, a validation procedure with an assessment of psychometric properties.

CONCLUSION

In accordance with current international recommendations, the language and cultural adaptation of the FADI, FAAM and SEFAS questionnaires for assessing the condition of the foot and ankle in various orthopedic pathologies was carried out

and their Russian versions were developed. They were tested on a population of patients with various orthopedic pathologies in need of surgical treatment what resulted in satisfactory indicators of the external validity of the instruments. A good content validity

of the FADI, FAAM and SEFAS questionnaires was established, as a part of the testing, based on a survey of orthopedic traumatologists. The use of

FADI, FAAM and SEFAS questionnaires in domestic orthopedics is possible after testing the psychometric properties of the instruments.

Conflict of interest Not declared.

Funding Not declared.

REFERENCES

1. Ayers DC, Bozic KJ. The importance of outcome measurement in orthopaedics. *Clin Orthop Relat Res*. 2013;471(11):3409-3411. doi: 10.1007/s11999-013-3224-z
2. Ayers DC, Zheng H, Franklin PD. Integrating patient-reported outcomes into orthopaedic clinical practice: proof of concept from FORCE-TJR. *Clin Orthop Relat Res*. 2013;471(11):3419-3425. doi: 10.1007/s11999-013-3143-z
3. MOTION Group. Patient-Reported Outcomes in Orthopaedics. *J Bone Joint Surg*. 2018;100(5):436-442. doi: 10.2106/JBJS.17.00608
4. Rolfson O, Bohm E, Franklin P, et al.; Patient-Reported Outcome Measures Working Group of the International Society of Arthroplasty Registries. Patient-reported outcome measures in arthroplasty registries Report of the Patient-Reported Outcome Measures Working Group of the International Society of Arthroplasty Registries part II. Recommendations for selection, administration, and analysis. *Acta Orthop*. 2016;87(Suppl 1):9-23. doi: 10.1080/17453674.2016.1181816
5. The American Board of Orthopaedic Surgery. Certification examinations part II: patient reported outcomes. From <https://www.abos.org/certification-exams/part-ii/patient-reported-outcomes.aspx>. Accessed 2017 Jun 14
6. Martin RL, Irrgang JJ. A survey of self-reported outcome instruments for the foot and ankle. *J Orthop Sports Phys Ther*. 2007; 37(2):72-84. doi:10.2519/jospt.2007.2403
7. Jia Y, Huang H, Gagnier JJ. A systematic review of measurement properties of patient-reported outcome measures for use in patients with foot or ankle diseases. *Qual Life Res*. 2017; 26(8):1969-2010. doi: 10.1007/s11136-017-1542-4
8. Whittaker GA, Munteanu SE, Roddy E and Menz HB. Measures of Foot Pain, Foot Function, and General Foot Health. *Arthritis Care Research (Hoboken)*. 2020;72(Suppl 10):294-320. DOI 10.1002/acr.24208
9. Mo Ts., Rigin N.V., Bobrov D.S., Slinyakov L.Yu. Questionnaires and scales for assessing the condition of the foot and ankle joint. *Kafedra travmatologii i ortopedii* [Department of Traumatology and Orthopedics]. 2016;4(20):5-11. (in Russ.)
10. Chan EKN, Edwards TC, Haywood K, Mikles SP, Newton L. Implementing patient-reported outcome measures in clinical practice: a companion guide to the ISOQOL user's guide. *Qual Life Res*. 2019;28(3):621-627. doi: 10.1007/s11136-018-2048-4
11. Carrozzino D, Patierno C, Guidi J, et al. Clinimetric Criteria for Patient-Reported Outcome Measures. *Psychother Psychosom*. 2021;90(4):222-232. doi: 10.1159/000516599
12. Martin R, Burdett R, Irrgang J. Development of the Foot and Ankle Disability Index (FADI). *J Orthop Sports Phys Ther*. 1999; 29:A32-A33.
13. Hale SA, Hertel J. Reliability and sensitivity of the Foot and Ankle Disability Index in subjects with chronic ankle instability. *J Athl Train*. 2005;40(1):35-40.
14. Leigheb M, Rava E, Vaiuso D, et al. Translation, cross-cultural adaptation, reliability, and validation of the Italian version of the Foot and Ankle Disability Index (FADI). *Acta Biomed*. 2020;91(4-S):160-166 doi: 10.23750/abm.v91i4-S.9544
15. Martin RL, Irrgang JJ, Burdett RG, Conti SF, Van Swearingen JM. Evidence of validity for the Foot and Ankle Ability Measure (FAAM). *Foot Ankle Int*. 2005;26(11):968-983. doi: 10.1177/107110070502601113
16. Borloz S, Crevoisier X, Deriaz O, Ballabeni P, Martin RL, Luthi F. Evidence for validity and reliability of a French version of the FAAM. *BMC Musculoskelet Disord*. 2011;12:40. doi: 10.1186/1471-2474-12-40
17. Cöster M, Karlsson MK, Nilsson JÅ, Carlsson A. Validity, reliability, and responsiveness of a self-reported foot and ankle score (SEFAS). *Acta Orthop*. 2012;83(2):197-203. doi: 10.3109/17453674.2012.657579
18. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)*. 2000; 25(24):3186-3191. doi: 10.1097/00007632-200012150-00014
19. Guidelines for Best Practice in Cross-Cultural Surveys. 2016; p. 842, from https://ccsg.isr.umich.edu/wp-content/uploads/2020/02/CCSG_Guidelines_Archive_2010_Version.pdf
20. Wild D, Grove A, Martin M, Eremenco S, McElroy S, Verjee-Lorenz A, Erikson P; ISPOR Task Force for Translation and Cultural Adaptation. Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. *Value in Health*. 2005;8(2):94-104. doi:10.1111/j.1524-4733.2005.04054.x
21. Ionova T.I. Principles of linguistic and cultural adaptation of questionnaires for assessing the quality of life. *Vestnik mezhnatsionalnogo tsentra issledovaniya kachestva zhizni* [Bulletin of the International Center for the Study of Quality of Life]. 2018;31-32:12-7. (in Russ.)
22. Viskarra M.E. *Izucheniye kachestva zhizni i funktsionalnogo sostoyaniya patsientov s perelomovyyvikhami golenostopnogo sustava s pomoshchyu shkal i oprosnikov*. Avtoref. Diss. kand. med. nauk [The study of the quality of life and functional state of patients with racture-dislocations of the ankle using scales and questionnaires. Abstr. Diss. Cand. Med. Sci.]. Moscow. 2011:83-86. (in Russ.)
23. Ilchenko D.V. *Kompleksnoe lechenie i reabilitatsiya patsientov s osteoartrrozom pervogo plyusnefalangovogo sustava*. Avtoref. Diss.kand.med.nauk [Comprehensive treatment and rehabilitation of patients with osteoarthritis of the first metatarsophalangeal joint. Abstr. Diss. Cand. Med. Sci.]. Moscow. 2020:128-133. (in Russ.)
24. Ilchenko D.V., Ilin D.O., Kardanov A.A., Achkasov E.E., Korolev A.V. An integrated approach to the conservative treatment of patients with osteoarthritis of the first metatarsophalangeal joint. *Nauchno-prakticheskaya revmatologiya* [Scientific and Practical Rheumatology]. 2021;59(4):463-470. (in Russ.)
25. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. *J Clin Epidemiol*. 1993;46(12):1417-1432. doi: 10.1016/0895-4356(93)90142-n
26. Terwee CB, Prinsen CAC, Chiarotto A, Westerman MJ, Patrick DL, Alonso J, Bouter LM, de Vet HCW, Mokkink LB. COSMIN methodology for evaluating the content validity of patient-reported outcome measures: a Delphi study. *Qual Life Res*. 2018;27(5):1159-1170. doi: 10.1007/s11136-018-1829-0

The article was submitted 19.04.2022; approved after reviewing 08.11.2022; accepted for publication 20.04.2023.

Information about authors:

1. Anton A. Akulaev – Head of the department, traumatologist-orthopedist, antonakulaev@gmail.com, <https://orcid.org/0000-0002-0502-8120>;
2. Aleksandr A. Ivanov – student, 3447014@gmail.com, <https://orcid.org/0000-0002-8227-5424>;
3. Tatyana I. Ionova – Doctor of Biological Sciences, Professor, tation16@gmail.com, <https://orcid.org/0000-0002-9431-5286>;
4. Sergey M. Efremov – Candidate of Medical Sciences, sergefremov@mail.ru, <https://orcid.org/0000-0001-5581-9169>;
5. Tatiana P. Nikitina – Candidate of Medical Sciences, tnikitina_74@mail.ru, <https://orcid.org/0000-0002-8279-8129>;
6. Konstantin A. Tishchenkov – traumatologist-orthopedist, drmutabor@yandex.ru, <https://orcid.org/0000-0003-3756-7281>;
7. Andrey A. Povaliy – traumatologist-orthopedist, povandrey16@yandex.ru.