

Reliability and Validity of the Gujarati Translated FAAM in patients with Foot and Ankle Disorders

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DOI: <https://doi.org/10.52403/ijhsr.20250807>

ABSTRACT

BACKGROUND AND NEED OF STUDY: The Foot and Ankle Ability Measure (FAAM) is a self-reported assessment tool designed to evaluate physical function in individuals experiencing foot and ankle impairments. It is a 29-item questionnaire divided into two subscales: the Foot and Ankle Ability Measure, 21-item Activities of Daily Living Subscale and the Foot and Ankle Ability Measure, 8-item sports subscale is a population-specific subscale designed for athletes. Since the FAAM scale is not yet available in Gujarati, it is necessary to develop a version that can be effectively utilized by Gujarati-speaking individuals

METHODOLOGY: An observational study was carried out in Ahmedabad to adapt a specific assessment tool into the Gujarati language. The translation process involved a dual forward-translation and back-translation approach to ensure linguistic accuracy. Based on the feedback of subject matter experts, healthcare professionals and academicians, a refined and unified version of the tool was finalized. The study involved 15 participants, comprising both males and females, with Foot and Ankle disorders. The adapted scale was then evaluated for face and content validity, as well as for internal consistency and reliability over time.

RESULT: In the validation process of the Gujarati version of FAAM, total of 29 questions existed. Validity of the scale was evaluated using face validity and content validity. Reliability was assessed with Cronbach's alpha and test-retest reliability assessed with ICC, 95% CI, $p < 0.001$. ADL Subscale: Cronbach's alpha 0.904; Sports Subscale: Cronbach's alpha 0.839. ADL Subscale: ICC = 0.934; Sports Subscale: ICC = 0.770. S-CVI/UA ADL Subscale = 0.814 and Sports subscale = 0.857; S-CVI/Ave = 0.85 for both subscales.

CONCLUSION: The Gujarati version of FAAM scale is valid and reliable tool to assess physical function for individual with foot and ankle related impairments in Gujarati speaking populations.

Keywords: Translation, Foot and Ankle measure, Reliability, Validity

INTRODUCTION

Foot and ankle conditions represent significant public health concerns, and as the population of older adults continues to grow, the impact of these issues is expected to increase. In individuals with rheumatoid

arthritis (RA), these conditions occur at approximately twice the rate seen in the general population. Despite their prevalence, foot and ankle conditions have received relatively little attention from rheumatology professionals. While non-

invasive interventions for joint malalignment at the knee and hip have received considerable attention, research on the foot - particularly regarding non-surgical treatments - remains limited that could help alleviate foot pain and rheumatic diseases affecting the foot.^[1] Foot and ankle conditions are a common problem that affects people of all ages and can range from mild discomfort to severe pain and disability. These conditions can greatly affect daily functioning, often hindering an individual's ability to carry out routine activities like walking, standing, and running. Plantar fasciitis, Achilles tendonitis, and ankle sprains are among the most common foot and ankle conditions.^[2] To better understand the functional limitations and disabilities associated with these disorders, researchers have developed various self-report outcome measures.^[3,4] Accurate assessment and tailored interventions are crucial for individuals suffering from foot and ankle conditions. Thus, appropriately developed patient reported outcome measures (PROMs) with good psychometric properties can play an important role in assessing the effect of treatment in foot and ankle condition patient care.^[2]

The Foot and Ankle Ability Measure (FAAM) is a self-reported instrument developed to evaluate physical function and daily living activities in people with foot and ankle impairments. Originally developed in 2005 by Martin et al, the FAAM has been validated for foot and ankle assessment and is widely used by orthopedic surgeons.^[5] This self-report outcome tool is intended to assess physical function in individuals with foot- and ankle-related impairments. It comprises two subscales: the 21-item Activities of Daily Living (ADL) subscale and the 8-item Sports subscale of the Foot and Ankle Ability Measure (FAAM). The Sports subscale assesses more difficult tasks that are essential to sport, it is a population-specific subscale designed for athletes.^[6,7,8] Each item on the FAAM is rated using a 5-

point Likert scale, where 4 indicates no difficulty, 3 slight difficulty, 2 moderate difficulty, 1 extreme difficulty, and 0 indicates the activity cannot be performed. The sixth response option is marked as not applicable (N/A) if the patient feels the item is irrelevant to them. When all items are completed, the maximum possible scores for the ADL and Sports subscales are 84 and 32, respectively. Scores are expressed as percentages by dividing the total obtained score by the maximum possible score and then multiplying the result by 100. Higher scores indicate a higher level of functional status in each of the 2 subscales.^[5] Translations and cross-cultural validations of the FAAM are available for several languages, such as Dutch, Turkish, French, Japan, Chinese, Persian, and Spanish.^[8,9,10,11,12,13,14] Evidence for reliability was obtained using the group that was expected to remain stable.^[3,4] ADL subscale: ICC = 0.89; SEM = 2,1 points; Sport subscale: ICC = 0.87; SEM = 4,5 points.

MATERIALS & METHODS

An observational methodological study was carried out in Ahmedabad, Gujarat, India, following approval from the Institutional Ethical Approval Committee. The study comprised two key phases: translation and validation, each systematically designed to minimize bias and ensure the reliability of the findings. Prior to commencing the study, formal permission was obtained from one of the original authors, RobRoy L Martin. The Foot and Ankle Ability Measure (FAAM) was translated from English to Gujarati using a standardized forward-backward translation method to ensure linguistic accuracy and preserve the original meaning. Initially, two native Gujarati speakers independently translated the FAAM—one with expertise in healthcare terminology and the other without a healthcare background. A consensus version was developed by synthesizing both translations. This version was then back translated into English by two professional translators to verify

consistency with the original content. A panel of experts, comprising a healthcare professional, academicians, a language expert, and a methodological researcher, reviewed all translated items. Each item was evaluated for its clarity, accuracy, and cultural appropriateness. Based on the panel's evaluation, items were categorized as accepted, accepted with modifications, or rejected, with revisions made accordingly. To assess the clarity of the translated questionnaire, a preliminary version was tested with individuals experiencing ankle and foot conditions. For the validation phase, a randomly selected sample of 15 participants from Ahmedabad was included. The participants were of both genders, diagnosed with foot and ankle disorders, age group (18-79 years). Eligible participants were provided with detailed information about the study's purpose and procedures. Informed written consent was secured from all participants before they took part in the study. Participants then completed the FAAM questionnaire, with attention given to ensuring their understanding of each item. Participant responses were collected and analyzed, with strict confidentiality maintained throughout the process. Face validity was established through patient feedback. The majority of participants reported that the items were clear, meaningful, and easy to comprehend. To evaluate test-retest reliability, the same questionnaire was re-administered after one week, and the results were compared. Completed questionnaires were reviewed for missing data and any language-related difficulties. No significant issues were observed, indicating that the translated version was both clear and easily understood. Following this, discussions among translators and subject matter experts led to the approval of the final Gujarati version of the FAAM.

STATISTICAL ANALYSIS

Data was analysed using SPSS version 20.0. In this study, psychometric properties of the Gujarati version of FAAM including test-retest reliability, internal consistency, content validity and Face validity, were evaluated.

RESULT

All 29 items of the FAAM questionnaire were validated for their effectiveness in assessing physical function among patients with foot and ankle disorders. Reliability, which reflects the consistency of measurement across repeated administrations, was thoroughly assessed. Test-retest reliability of the Gujarati version of the FAAM was evaluated using Intraclass Correlation Coefficients (ICC) with a 95% confidence interval. Internal consistency, indicating the degree of homogeneity among the questionnaire items, was measured using Cronbach's alpha. The results demonstrated that the Gujarati version of the FAAM exhibited excellent internal consistency and robust test-retest reliability.

ADL Subscale: Cronbach's alpha (α) 0.904
Sports Subscale: Cronbach's alpha (α) 0.839

Test-retest reliability (7-day interval):

ADL Subscale: ICC = 0.934, 95% confidence interval [0.814-0.977], $p < 0.001$ (Excellent reliability)

Sports Subscale: ICC = 0.770, 95% confidence interval [0.441-0.916], $p < 0.001$ (Good Reliability)

Validity has been assessed with face validity and content validity. For face validity, 10 participants confirmed that items were clear, easy to understand and relevant to their conditions. The content validity was assessed, providing data that included S-CVI/UA ADL Subscale = 0.814 and Sports subscale = 0.857; S-CVI/Ave = 0.85 for both subscales.

Reliability Statistics	
Cronbach's Alpha	N of Items
.904	21

Reliability Statistics	
Cronbach's Alpha	N of Items
.839	7

Intraclass Correlation Coefficient (ADL Subscale)							
	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.934 ^a	.814	.97	29.130	14	14	.000
Average Measures	.966 ^c	.898	.988	29.130	14	14	.000

Intraclass Correlation Coefficient (Sports Subscale)							
	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.770 ^a	.441	.916	7.677	14	14	.000
Average Measures	.870 ^c	.612	.956	7.677	14	14	.000

DISCUSSION

There is growing focus today on employing research tools that are both standardized and rigorously tested, as they allow for meaningful comparisons of findings within a country and internationally. One such category of tools is patient-reported outcomes (PROs), which encompasses various types of assessments that capture a patient's health status directly from their own viewpoint. These tools, often referred to as PROMs (patient-reported outcome measures), are distinct in that they prioritize the individual's personal experience and perspective. PROMs are increasingly valued as a complement to traditional medical indicators and are being more widely integrated into both clinical studies and routine healthcare. Their use is based on the premise that a thoroughly validated tool provides reliable evidence that it truly measures what it claims to assess.^[15] In a diverse country like India, using tools such as the FAAM carries important ethical considerations for multiple reasons. Merely translating the instrument into another language does not ensure its full cultural adaptation. Instead, a comprehensive cross-cultural adaptation is essential when applying the scale in a new linguistic, national, and contextual environment.^[16] India is home to 22 constitutionally recognized languages. In multi-center research, data from various regions are combined, making it essential to adapt tools culturally for each language to ensure that

the aggregated results are truly meaningful and applicable.^[17] The primary objective of this research was to create an accurate and dependable Gujarati adaptation of the FAAM by employing a thorough translation and cultural adaptation process. The procedure adhered to recognized standards, incorporating forward and backward translation, evaluation by a panel of experts, and pilot testing with individuals from the intended demographic. The translation process was carried out smoothly, with no significant issues, and the original format of the FAAM was carefully preserved throughout. Every item from the source version was kept intact, with no changes in order or omissions. These results align with the previous study done by Lauren M Matheny et.al (2019) which evaluated reliability of FAAM scale in patients who underwent ankle surgeries using Rasch measurement model. Reliability was very good. For the FAAM Activities of Daily Living (ADL) subscale, person reliability was 0.87 and item reliability was 0.99. For the FAAM Sports subscale, person reliability reached 0.89, with item reliability at 1.00.^[18]

CONCLUSION

The Gujarati adaptation of the Foot and Ankle Measure (FAAM) was completed with careful attention to preserving the original tool's conceptual meaning and measurement accuracy. A thorough validation process confirmed that the

translated scale is appropriate, relevant, and comprehensible for the Gujarati-speaking community. The results of the study affirm that the Gujarati FAAM is a dependable and accurate measure for identifying sensory processing issues in children. Its strong reliability and validity make it suitable for use across healthcare, educational, and research domains. This culturally and linguistically adapted version ensures that the original assessment's intent is upheld while making it accessible to a broader population.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: The authors gratefully acknowledge RobRoy L Martin for granting permission to translate and validate FAAM scale into Gujarati. We are deeply grateful to the senior faculty members for their guidance and contributions throughout the validation phase. We also warmly acknowledge the participants whose engagement and cooperation were instrumental to the success of this study.

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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- How to cite this article: Dhwani Gandhi, Amit M. Patel. Reliability and validity of the Gujarati translated FAAM in patients with foot and ankle disorders. *Int J Health Sci Res*. 2025; 15(8):46-51. DOI: [10.52403/ijhsr.20250807](https://doi.org/10.52403/ijhsr.20250807)
