

Measuring Pain With the Foot Function Index



► The feeling of aching, tired feet is one you may be familiar with if you are on your feet all day and/or if you have any chronic diseases such as rheumatoid arthritis (RA) or diabetes mellitus (DM). Feet tend to mirror one's general health and ailments in the feet may serve as the first sign of more serious conditions such as arthritis, diabet-

es, and nerve and circulatory disorders. It is a known fact that women have about four times as many foot problems as men; a habit of wearing high heels and other inappropriate shoes being the primary cause.¹

Foot problems have a high occurrence not only in women, but in the elderly population as well, and are associated with impaired balance and performance in functional tests. Interestingly, older people with a history of multiple falls have greater foot impairment than elderly who have never fallen or who have fallen only once.² Due to the prevalence of foot issues within the aging population, finding an instrument that is accurate in evaluating pain and disability is advisable.

'Healing' Foot Pain

The Foot Function Index (FFI), designed with the elderly community/outpatient population in mind, is focused on the foot and was developed to measure activity restriction secondary to pain in the foot.³ It specifically was designed to measure a person's current state (within the past week) and change in function/status. The FFI is a self-administered questionnaire that takes approximately 5 to 10 minutes to complete. It contains three subscales that examine foot pain (pain subscale), disability (disability subscale) and activity limitation (activity limitation) in correlation with foot pathology. All subscales contain nine items, with the exception of the activity limitation subscale, which contains five items.

Items were originally scored using a visual analog scale (VAS) with the endpoints being "no pain" and "worst imaginable pain." This

was later modified to a 10-point Likert scale, with 0 indicating "no pain" and 10 indicating "worst imaginable pain." Scoring is done for each scale and calculated by taking the score for each individual question and dividing it by the number of questions in each section.⁴ The score is then multiplied by 100 to get a range for each subscale with the score ranging from 0-100, with higher scores indicating greater impairment. A total score can be obtained by averaging the two subscale scores.³

For individuals with foot pain, the FFI may be a useful tool for quantifying impairments, which in turn will help the clinician prescribe proper therapeutic interventions.

Test-retest or consistency of the FFI was established by Budman-Mak et al. in mostly male patients ranging in age from 24 to 79 years with RA and without any foot deformities.³ Intraclass correlation (ICC) for total score on the FFI was 0.87 with ICC = 0.81 for activity limitation and disability (ICC = 0.84). The pain subscale had an ICC = 0.69. Internal consistency for the total index had a Cronbach's = 0.95 with the disability and pain subscales having high internal consistency (= .094; 0.92 respectively). The activity limitation subscale demonstrated with a Cronbach's = 0.73, making it the least internally consistent of all the subscales.³

Reliability of the FFI was also assessed in patients without systemic disease (i.e., RA) but who presented with foot complaints (e.g., deformity, ankle/hindfoot complaints, forefoot problems).⁴ The study authors found that a limitation of the FFI was in its inability to record activity status for patients who were not sedentary and participated in physical activity. Because this was not accounted for, a ceiling effect was achieved for those who had a more active lifestyle. Many questions on the FFI were left unanswered in the non-RA population, indicating that many of the items

were not salient to them, which left these questions out of the scoring algorithm.⁴

Construct validity of the FFI was established using principal components factor analysis. Criterion validity was established by comparing the FFI subscales to the foot joint count, 50 feet walking time and grip strength. Moderate correlations were found between the FFI and these measures.³ Validity of the FFI was established by assessing the level of correlation with the Medical Outcomes Study Short Form 36 (SF-36), a well-known measure for use within the orthopedic/musculoskeletal population. Soohoo et al. found moderate to high correlations with SF-36 subscales and the three subscales of the FFI.⁵ This study established the FFI as a valid index for measuring health status in terms of monitoring patient outcomes and foot function in an outpatient setting.

Reliability of the FFI has been shown from moderate to high, although it should be noted that there are some limitations to its use, as pointed out by Agel et al. in the more active population with foot pathology not attributed to RA and without foot deformity.⁴ In this case it has been recommended that the FFI be best used as an instrument to assess lower-functioning individuals.

For individuals with foot pain, the FFI may be a useful tool for quantifying impairments, which in turn will help the clinician prescribe proper therapeutic interventions. Identifying activity limitations secondary to foot pain and structural changes is especially important in the elderly population, as it will allow clinicians to address these changes and decrease the possibility of sustaining a fall. ■

References available at www.advanceweb.com/PT or by request.

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