

# A Closer Look at Using the LEFS

► Unlike some of the other scales reviewed in this column, the Lower-Extremity Functional Scale (LEFS)<sup>1</sup> is not used exclusively for the geriatric population. In fact, the developers of the LEFS explicitly stated that a guideline for scale development is that it would be “applicable to a wide variety of patients with lower extremity orthopedic conditions, including patients with a range of disability levels, conditions, diseases, treatments, and ages.”<sup>1</sup> The mean age for individuals in the initial development study was 44 years.

## Scale Description

The development of the LEFS as a measure of functional lower-extremity (LE) impairment was accomplished through clinical assessment of 107 patients with a variety of musculoskeletal diagnoses in multiple orthopedic physical therapy clinics.

The scale initially consisted of 22 items, but after piloting on 57 patients referred to physical therapy with lower extremity dysfunction and subsequent factor analysis the questionnaire was reduced to 20 items each with a maximum score of 4. The total possible score for the LEFS is 80 with a higher score indicating a higher functional level.<sup>1</sup>

The LEFS is a one-page, easy-to-administer questionnaire that can be completed in approximately two minutes or less. Scoring is done by totaling the responses for all items and can be accomplished quickly without the use of formulas or calculators. There is no training or special equipment required to administer this scale. The complete LEFS is available in the appendix of the original article.<sup>1</sup>

## Construct Validity

Four determinants were used to examine the validity of the LEFS: 1) A moderate correlation ( $r > .6$ ) between the LEFS scores and those of the SF-36 physical function subscale and SF-36 physical component summary scores at the initial and 3-week follow assessment would exist; 2) There would be a low correlation ( $r > .05$ ) between the scores on the LEFS and the SF-36 mental health subscale and the SF-36 mental component summary scores; 3) Patients who underwent surgery less than two weeks prior to their initial assessment would have lower LEFS and SF-36 physical function subscale and physical component summary scores than patients who did not have recent surgery, and 4) Patients with acute conditions would demonstrate lower LEFS scores and SF-36 physical function and physical component summary scores than would patients who had chronic conditions.

The correlation between the LEFS scores and SF-36 mental component summary scores was  $r = .30$  with differences between scores in patients with recent surgery vs. those without recent surgeries. Correlations between the LEFS scores and the SF-36 physical function subscale and physical component summary scores were  $r = .80$ .

There was a difference in LEFS scores between the patients with acute conditions and the patients with chronic conditions ( $P = .027$ ).

There was no difference in SF-36 physical function subscale, physical component summary, and mental component summary scores between the patients with recent surgery and the patients without recent surgery ( $P = .117$ ) or between the patients with chronic conditions ( $P = .471$ ).<sup>1</sup>

## Reliability

In the original study, test-retest reliability was measured by having the patients complete the questionnaire at their initial appointment and again 24 to 48 hours later. Internal consistency was  $= .96$  with test-retest reliability being  $R = .86$  for the entire sample and  $R = .94$  for a subset of patient with chronic conditions.<sup>1</sup> In a study conducted by Watson et al. with younger patients with musculoskeletal conditions, test-retest reliability was  $ICC2,1 = 0.98$  for the LEFS.<sup>2</sup>

**This questionnaire is a fast and easy way to evaluate LE problems and assess progression of intervention/treatment over time.**

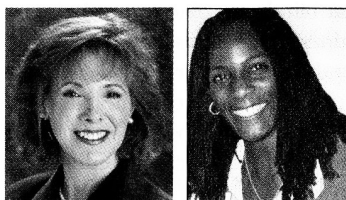
Receiver-operating characteristic curve analysis revealed that the LEFS was moderately responsive with the area under the curve being LEFS (0.77). The larger the area under the curve, the better the questionnaire’s ability to distinguish between those patients who

underwent a clinically important change from those who did not.<sup>2</sup> As a measure of musculoskeletal LE dysfunction, the LEFS has been shown to be a reliable and valid tool in both younger (mean age = 35 years)<sup>2</sup> and slightly older (mean age = 44 years)<sup>1</sup> populations. This questionnaire is a fast and easy way to evaluate LE problems and assess progression of intervention/treatment over time. ■

## References

1. Binkley, J., Stratford, P., Lott, S., & Riddle, D. (1999). The Lower Extremity Functional Scale (LEFS): Scale development, measurement properties and clinical application. *Physical Therapy*, 79, 371-383.
2. Watson, C., Propps, M., Ratner, J., Zeigler, D., Horton, P., & Smith, S. (2005). Reliability and responsiveness of the Lower Extremity Functional Scale and the Anterior Knee Pain Scale in patients with anterior knee pain. *Journal of Orthopedic Sports Physical Therapy*, 35, 136-146.

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