

# PRESEASON LOWER EXTREMITY FUNCTIONAL TEST SCORES ARE NOT ASSOCIATED WITH LOWER QUADRANT INJURY – A VALIDATION STUDY WITH NORMATIVE DATA ON 395 DIVISION III ATHLETES

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## ABSTRACT

**Background:** Preseason performance on the lower extremity functional test (LEFT), a timed series of agility drills, has been previously reported to be associated with future risk of lower quadrant (LQ = low back and lower extremities) injury in Division III (D III) athletes. Validation studies are warranted to confirm or refute initial findings.

**Hypothesis/Purpose:** The primary purpose of this study was to examine the ability of the LEFT to discriminate injury occurrence in D III athletes, in order to validate or refute prior findings. It was hypothesized that female and male D III athletes slower at completion of the LEFT would be at a greater risk for a non-contact time-loss injury during sport. Secondary purposes of this study are to report other potential risk factors based on athlete demographics and to present normative LEFT data based on sport participation.

**Methods:** Two hundred and six (females = 104; males = 102) D III collegiate athletes formed a validation sample. Athletes in the validation sample completed a demographic questionnaire and performed the LEFT at the start of their sports preseason. Athletic trainers tracked non-contact time-loss LQ injuries during the season. A secondary analysis of risk based on preseason LEFT performance was conducted for a sample (n = 395) that consisted of subjects in the validation sample (n = 206) as well as athletes from a prior LEFT related study (n = 189).

**Study Design:** Prospective cohort

**Results:** Male athletes in the validation sample completed the LEFT [98.6 ( $\pm$  8.1) seconds] significantly faster than female athletes [113.1 ( $\pm$  10.4) seconds]. Male athletes, by sport, also completed the LEFT significantly faster than their female counterparts who participated in the same sport. There was no association between preseason LEFT performance and subsequent injury, by sex, in either the validation sample or the combined sample. Females who reported starting primary sport participation by age 10 were two times (OR = 2.4, 95% CI: 1.2, 4.9; p = 0.01) more likely to experience a non-contact time-loss LQ injury than female athletes who started their primary sport at age 11 or older. Males who reported greater than three hours per week of plyometric training during the six-week period prior to the start of the preseason were four times more likely (OR = 4.0, 95% CI: 1.1, 14.0; p = 0.03) to experience a foot or ankle injury than male athletes who performed three or less hours per week.

**Conclusions:** The LEFT could not be validated as a preseason performance measure to predict future sports injury risk. The data presented in this study may aid rehabilitation professionals when evaluating an injured athlete's ability to return to sport by comparing their LEFT score to population norms.

**Level of Evidence:** 2

**Keywords:** Agility, college, epidemiology, functional test, lower quadrant

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Conflict of Interest / Declaration Statement

The authors do not have any conflict of interests to report