

The Leg-Tuck versus the Plank-Hold Relative to the Army Combat Fitness Test: Interactions with Body Composition, Strength and Sex.

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ABSTRACT

In 2020 the U.S. Army replaced their older physical fitness test with the Army Combat Fitness Test (ACFT) to replicate modern battlefield demands. One component of the test, the leg-tuck (LTK) was found to disproportionately fail female soldiers. Following an independent review, the Army adopted the plank-hold (PLK), attempting to limit the influence of sex differences during the assessment. However, research regarding performance, relationships, and the influence of sex on the LTK versus the PLK is limited. **PURPOSE:** To determine relationships between the LTK, PLK, sex, body composition and abdominal and grip strength. **METHODS:** 49 physically active civilian college students (28 males, 21 females) were recruited as a surrogate population for Army personnel in this study. The following data were collected in one session: height; body mass (BM), body fat (BF%) and muscle mass percentage (MM%) measured via bioelectrical impedance analysis; combined grip strength (CGS) from both hands; the LTK; and the PLK. ACFT standards were utilized for the LTK and PLK for all participants and a 10-minute rest was provided between tests. Independent t-tests compared sexes in all variables ($p < .05$). Partial correlations controlling for sex detailed relationships between the LTK and PLK and the other variables ($p < .05$). Stepwise regression controlling for sex derived predictive relationships for the LTK and PLK. **RESULTS:** There were significant between-sex differences with males being taller, having greater BM, MM%, and performing better in CGS and the LTK. Females had greater BF%. There was no significant between-sex difference found in PLK performance. The LTK significantly correlated with PLK ($r = .404$), height ($r = .546$), BM ($r = .343$), BF% ($r = -.639$), MM% ($r = .697$) and CGS ($r = .732$). In addition to the relationship with the LTK, the PLK only correlated with BF% ($r = -.295$). Stepwise regression analysis showed LTK performance was predicted by sex ($r^2 = .441$), grip strength ($r^2 = .595$), and PLK performance ($r^2 = .662$). When controlling for sex, a significant predictive relationship was not produced for the PLK. **CONCLUSION:** Compared to the LTK, the PLK appeared to minimize the influence of sex and body composition on task performance in college-aged civilians. More research is needed on whether the PLK relates to Army job tasks.