

Single-leg Squat: Interrater Reliability and Sex Differences in Medial Knee Displacement in Collegiate Athletes

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The Single Leg Squat (SLS) is a commonly performed clinical screening tool used to identify faulty lower extremity biomechanics, specifically dynamic knee valgus. Despite this use, few studies have investigated its reliability or examined if sex-differences exist in SLS performance in athletic populations. **PURPOSE:** Determine interrater reliability of the SLS and investigate whether occurrence of medial knee displacement (MKD) differed between male and female collegiate athletes. **METHODS:** Fifty injury-free Division I collegiate athletes completed SLS testing as part of their preparticipation exam, including 25 men (age=18.5±1.7y, height=185.4±8.7cm, mass=98.9±20.9kg) and 25 women (age=18.1±0.7y, height=167.9±7.8cm, mass=65.5±10.5kg). Participants completed 5 consecutive SLSs on each leg while being recorded with a standard video camera from the frontal plane view. Videos were slowed and paused for scoring purposes. Participants were assigned a positive (+) SLS score if the midpoint of the patella moved to the great toe during the SLS in at least 3 of the 5 trials. All trials were scored by 2 members of the research team (GM, RM). Frequency counts were calculated and agreement of the SLS was analyzed with an unweighted kappa statistic. Pearson Chi-square tests were used to evaluate the association between sex and SLS performance. **RESULTS:** The interrater reliability for the right and left-leg SLS scores was 0.762 and 0.634, respectively, which indicated a substantial level of agreement. The overall percent agreement was 85%. More than half (30 of 50; 60%) of all athletes had a (+) SLS test result in at least 1 leg. Although not significant, females were almost twice as likely ($\chi^2=1.33$; $p=0.248$, OR=1.96, 95%CI=0.62-6.19) to have a (+) SLS score in at least 1 leg in comparison to males. A significant association was found between bilateral MKD and sex; females were roughly 4 times as likely ($\chi^2=5.33$; $p=0.021$, OR=4.03, 95%CI=1.20-13.53) to have a (+) SLS score on both legs in comparison to males. **CONCLUSION:** The interrater reliability for the MKD component of the SLS demonstrated a substantial level of agreement. Female collegiate athletes displayed a greater occurrence of MKD than male collegiate athletes. Future work will determine if SLS performance is a predictor of injury in collegiate athletes.