

## **Side-to-Side Knee Strength Imbalances and Increased Odds of Reporting Injury in Military Special Forces Operators**

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Lower extremity strength differences are common in athletic populations. Previous studies have indicated <10% differences to be “normal” and >20% as “probably abnormal”. Increased injury risk in athletes with side-to-side strength differences has been shown, but few studies exist on military injury risk based on strength imbalance. **PURPOSE:** To compare isokinetic knee strength in Air Force Special Operations Command (AFSOC) Operators who reported/denied a previous lower extremity injury (LI) or knee injury (KI) and to examine potential increased odds of reporting previous injury based on the magnitude of side-to-side differences (StoSD) in knee strength. **METHODS:** 150 AFSOC Operators self-reported injury history and completed isokinetic strength testing on knee musculature. Injury history was obtained by a clinician. Injury counts were classified into groups: reported/not reported LI and/or reported/not reported KI, then analyzed using appropriate independent samples tests. Peak torque from 5 knee extension/ flexion repetitions were averaged and normalized to body weight. StoSD were calculated as the absolute value of the difference between limbs and dividing it by average peak torque of the dominant limb. For odds ratio comparison, subjects were placed into cohorts: <10%, 10-20%, and >20% strength difference. **RESULTS:** Operators who reported a previous LI and those who reported a KI demonstrated larger StoSD (LI:  $p=0.029$ , KI:  $p=0.011$ ) in knee extension strength (LI:  $10.9\pm 10.5\%$ , KI:  $13.5\pm 12.9\%$ ) compared to those who didn't report an injury (LI:  $8.0\pm 5.4\%$ , KI:  $8.1\pm 5.9\%$ ). Operators with >20% StoSD in knee extension strength had increased odds of reporting an LI (OR=3.3, 95% confidence interval (CI) (0.891,12.218);  $p=0.026$ ) and a KI (OR=1.9, 95% CI (0.985-3.476);  $p=0.014$ ) compared to those in the <10% cohort. Operators with >20% StoSD in knee extension strength also had increased odds of reporting a KI (OR=1.8, 95% CI (0.958, 3.527);  $p=0.025$ ) compared to the 10-20% cohort. **CONCLUSIONS:** AFSOC Operators with a previous KI demonstrated significant StoSD in knee extension strength and those with >20% differences had increased odds (1.8-3.3) of reporting a previous LI or KI. Targeted rehabilitation for those with previous lower extremity injuries may improve StoSD in strength and limit potential re-injury risk.