

## Test Re-Test Reliability of Peak Force During Isometric Knee extension and Squat

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### ABSTRACT

Acquiring reliable performance outcomes for laboratory procedures is critical for evaluation and prescription thereafter. Additionally, reliable data collected from separate testing days may present potential errors in the overall methodological approach. Instructing and testing participants to perform tasks that are relatively new can come with a learning curve and may require additional practice and familiarization. **PURPOSE:** To determine the reliability of peak force production during the isometric knee extension (KE) and squat (SQ) performed on two separate days. **METHODS:** Fourteen male (23±3 yrs.; 87.74±11.82 kg; 175.57±6.92 cm) and 12 female (23±3 yrs., 62.79±5.89kg; 165±5.76cm) lower body resistance trained individuals completed 8 separate maximal isometric voluntary contractions (MVCs) of the KE and SQ using an S-Beam load cell and custom made chair and platform. Following a familiarization visit, each subject randomly completed two MVCs at 110° and 150° (KE<sub>110°</sub>, KE<sub>150°</sub>, SQ<sub>110°</sub>, SQ<sub>150°</sub>) of knee extension for both performances on two-separate visits. The MVC that had the highest force was chosen for further analysis using the interclass correlation coefficient (ICC<sub>3,1</sub>) for reliability between days (KE<sub>110°</sub>, KE<sub>150°</sub>, SQ<sub>110°</sub>, SQ<sub>150°</sub>). **RESULTS:** For MVCs during KE<sub>150°</sub>, SQ<sub>110°</sub>, and SQ<sub>150°</sub>, there was no systematic variability in force between days (ICC<sub>3,1</sub> = 0.71-0.91). However, for KE<sub>110°</sub>, there was a difference (p= 0.04) in ICC<sub>3,1</sub> for peak force between testing days. **CONCLUSION:** Performing MVCs during isometric KE and SQ on separate days may provide reliable outcomes for measuring force production. However, consideration may need to be taken when requiring participants to perform at knee joint angles that may require more practice or comfortability with the movement task.