

Test-retest strength reliability of the Electronic Push/Pull Dynamometer (EPPD) in the measurement of the quadriceps and hamstring muscles on a new chair

Authors: Mikhled F, M., Mohammad D, A.-J., Saad S, E. Z., Ali H, A., Emad T, A., Amr A, A.-A., . . . Yaser OM, A. A

Abstract: Background: Test-retest strength reliability of the Electronic Push/Pull Dynamometer (EPPD) in the measurement of the extensor and flexor muscles on a new constructed chair. The objective of the study was to assess reliability of Electronic Push/Pull Dynamometer in the measurement of the knee flexion and extension at 90° and 60° on a new constructed chair. The aims of the author: To assess reliability of Electronic Push/Pull Dynamometer in the measurement of the knee flexion and extension at 90° and 60° on a new constructed chair. Design: A test-retest reliability study. Subjects: One hundred healthy students male and female (mean age, 21 y). Methods: Maximum isometric strength of the quadriceps and hamstring muscle groups was measured using the EPPD were recorded at 60° and 90° for 3 trials on 2 occasions. Reliability was assessed with the Intraclass correlation coefficient (ICC), mean and standard deviation (SD) of measurements, and smallest real differences were calculated for the maximum and for the mean and work of the 3 repetitions. Results: Mean strength ranged from 50.44 kg for knee flexion to 55.76 kg for knee extension 50.44 kg to 61.98 kg at 90° hip flexion. Test-retest reliability Intraclass correlation coefficients (ICCs) ranged from 0.85 to 0.99. ICCs for test-retest reliability ranged from 0.780 to 0.998. Conclusions: The results of the reliability study indicate that the EPPD is reliable dynamometer to use in determining lower limb muscle force production. It can be used to measure disease progression and to evaluate changes in knee extension and flexion strength at the individual patient level.