

## Reliability and Validity of the DynEx Dynamometer

### ABSTRACT

The purpose of the study was to examine the reliability and validity of the digital DynEx dynamometer. Grip strength testing was conducted on 100 healthy subjects (ages 20 to 40) using both the Jamar and DynEx dynamometers in the second handle position. The data was analyzed for test-retest reliability and concurrent validity using Intraclass correlation coefficient (ICC). A repeated-measures analysis of covariance (ANCOVA) was conducted to reveal differences in grip strength between instruments. In addition, measurement error was calculated with known weights. The DynEx dynamometer was found to have high test-retest reliability both with human subjects ( $r=0.9864$ ) and with known weights suspended from the dynamometer's handle ( $r=0.9999$ ). The DynEx dynamometers had a smaller measurement error (1.63%) than the Jamar dynamometers (7.74%). Although significant differences were found between grip scores obtained on the Jamar and the DynEx ( $F=6.222$ ;  $p=0.014$ ), the concurrent validity between the two instruments was excellent ( $r>0.98$ ). The results of this study indicate that clinicians can use the DynEx dynamometer at the second handle position knowing that it is reliable, valid, and comparable to the second handle position of the Jamar dynamometer.

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