Normative Data for the 5 Position Baseline Hydraulic Pinch Meter® and the Relationship between Lateral Pinch Strength and Pinch Span

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Introduction
- Newly developed Baseline® 5 Position Hydraulic Pinch Meter allows pinch strength assessment at five different pinch spans.
- Develop normative data using healthy subjects,
- Evaluate 5 Position Pinch meter interrater reliability,
- Identify which pinch span the greatest force was produced.

Method
- Data Analysis
  - Data stratified by age and sex for normative standards and analyzed
    - One-way repeated measures ANOVA (means of 5 different pinch span levels)
    - Three-way mixed ANOVA (interaction between pinch span levels, age and sex).

Results
- Excellent interclass correlation (ICC) = 0.981.
- Sample size = 605 (292 males & 313 females)

Discussion
- Greatest pinch force to be generated at 4-5 cm of pinch span which was similar to the findings of Dempsey & Ayoub who found the greatest pinch strength to be produced at 5cm of pinch span.
- Findings conflict with much of the previous literature produced at 5cm of pinch span.
- Results could be beneficial to clinicians when modifying tasks or building up handles or utensils to various pinch spans.

Limitations:
- Normality was violated using the Shapiro-Wilks test. ANOVA is considered robust to deviations from normality.
- Two data points were noted to be extreme outliers out of 18,150 data points.
- Sphericity was violated through examination using Mauchly's test of sphericity, indicating a heterogeneous sample.

Strengths:
- Large sample size.
- The Baseline 5 Position Hydraulic Pinch Meter was found to demonstrate excellent IRR.

Power Analysis
- Sample size = 605 (292 males & 313 females)
- The authors have no financial relationship with Fabrication Enterprises, the manufacturer of the 5 Position Baseline® Hydraulic Pinch Meter.

Fabrication Enterprises provided three pinch meters to use for data collection. These were returned following study completion.

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