

Hand Span Influences Optimal Grip Span in Boys and Girls Aged 6 to 12 Years

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Purpose

The first aim was to determine whether there is an optimal grip span for determining the maximum hand grip strength in boys and girls aged 6 to 12 years and whether the optimal grip span was related to hand span. If so, the second aim was to derive a mathematical equation relating hand span and optimal grip span.

Methods

A total of 123 boys ($9 \text{ y} \pm 2$) and 70 girls ($8 \text{ y} \pm 2$) were evaluated. Each hand was randomly tested on 10 occasions using 5 different grip spans, allowing a 1-minute rest between attempts. The hand span was measured from the tip of the thumb to the tip of the little finger with the hand opened widely.

Results

An optimal grip span to determine maximum hand grip strength was identified for both genders. Hand span and optimal grip span showed a significant linear association in the studied children. The equation relating grip span as a function of hand span in boys is formulated as $y = x/4 + 0.44$ and in girls as $y = 0.3x - 0.52$, where x is the hand span (maximal width between first and fifth fingers) and y is the optimal grip span.

Conclusions

The results suggest that there is an optimal grip span to which the dynamometer should be adjusted when measuring hand grip strength in children. The optimal grip span was influenced by hand span in both genders. (*J Hand Surg* 2008;33A:378 – 384. Copyright © 2008 by the American Society for Surgery of the Hand.)

Key words

Children, dynamometry, hand grip strength, reliability, standardization.