



Unsupported upper limb exercise test: Reliability and learning effect

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Article

Figures & Data

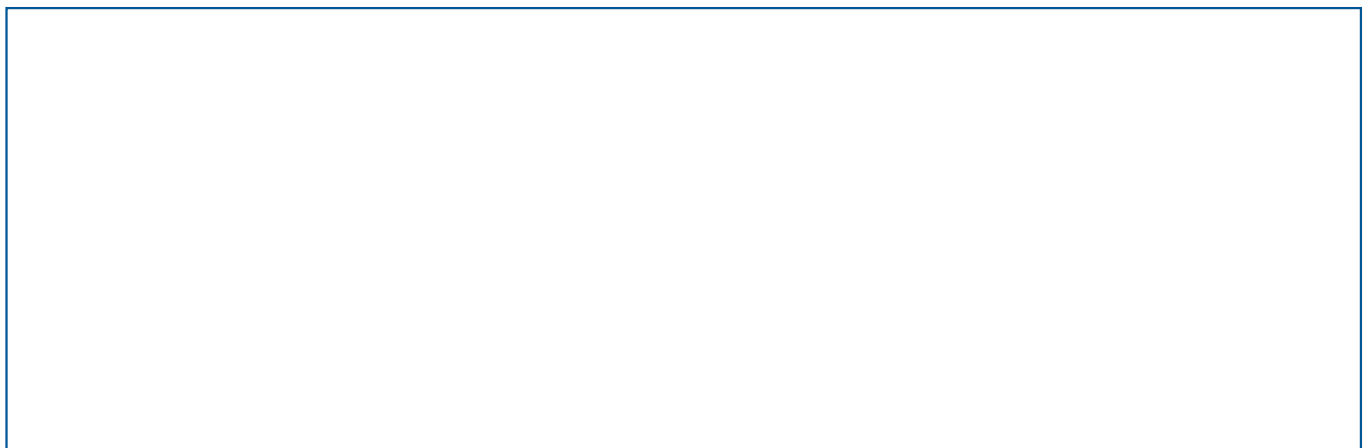
Info & Metrics

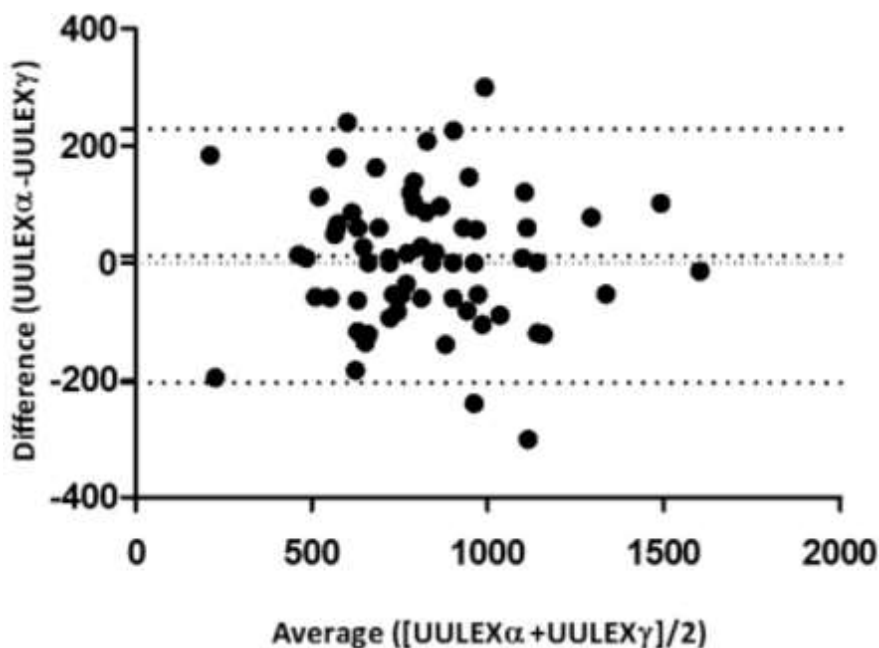
Abstract

The Unsupported Upper Limb Exercise Test (UULEX) has been increasingly used to assess unsupported arm exercise capacity (Chest 2012; 141(1):111–120). However, UULEX is time consuming and demanding, thus it is essential to investigate its reliability and to establish the minimum number of tests effectively needed (learning effect).

Seventy five healthy participants enrolled (32[male]; 29.5±16.8yrs). Participants have never performed the UULEX. Each participant performed 3 repetitions, separated by 30-minute rest periods. Relative reliability was assessed with the intraclass correlation coefficient (ICC_{1,3}) and absolute reliability with the Bland and Altman (BA) plot. Learning effect was assessed with the repeated measures ANOVA for the exercise time.

ICC values showed excellent reliability (ICC= 0.893; 95%CI: 0.849-0.928) and BA plot evidenced no systematic bias between the measures (**fig.1**).





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Exercise time was not significantly different between repetitions ($p=0.503$; $\eta^2=0.019$) ([table 1](#)).

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The excellent reliability and the absence of a learning effect suggest that one single UULEX might be enough to assess arm exercise capacity with confidence. This may save time and efforts in patients' assessment. Studies in different age range and in diseased populations are needed.

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