

Abstract

Title: Predictive validity of the All- out test of finger flexors for climbing performance

Objectives: The main aim of the study was to determine the predictive validity of the all-out test of finger flexors during climbing performance for competitive sport climbers in redpoint (RP), on-sight (OS), and bouldering.

Methods: The work was carried out as a cross sectional study, in which the relationship among climbing performance and the results of all- out test was researched. The all-out test was implemented by a dominant hand according to the protocol on a specific climbing dynamometer 1D SAC (SpaceLAB Sofia, Bulgaria) on a 23 mm wide rung. The non parametric statistical Mann-Whitney U-test for continuous variables and chi-square test for categorical variables were used in data analysis. Spearman's rank correlation coefficient was used in the correlation analysis. A standardised Beta coefficient was calculated in linear regression models to assess the predictive validity of selected variables from the all-out test.

Results: The tested group was consisted of a total of 31 mostly sport climbers aged $30.0 \pm 8,6$ years, of which 23 were men and 8 women. The highest statistically significant correlation among men was between OS climbing performance and the moment of force from the whole all-out test W total (kg.s) $r= 0.506$ ($p < 0,01$), and in women between OS performance and critical force (kg) $r= 0.811$ ($p < 0.01$). Climbing performance RP best captured the non-adjusted model for critical force (kg) $\beta = 0.533$ ($p < 0.01$) in the regression analysis. In addition, climbing performance OS, model for critical force (kg) was adjusted for gender, environmental preference and preferred type of climbing.

Conclusion: The items of all out test of finger flexor tested on a 23 mm wide rung in climbing performance of both RP and OS correspond relatively well. The critical force had the highest predictive validity.