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ROAD TO PARIS 2024: FORCE- VELOCITY PROFILE IN SPEED CLIMBERS

MUÑOZ DE LA CRUZ, V., Rodrigo-Carranza, V., Gonzalez-Rave, J.M.

University of Castilla-La Mancha - Toledo Campus: Universidad de Castilla-La Mancha

INTRODUCTION:

Speed climbing will be a new discipline at the next Olympic games in Paris 2024 within sport climbing along with bouldering and lead climbing. Physical requirements of speed climbing are different from the other modalities, especially due to the short event time (WR men=5" & WR women=6.53"). Previous studies indicate that speed climbing requires higher level of strength and power (1,2). These parameters have been measured through the F-V profile previously in different type of climbers (3). However, there are no known results evaluating at different speed climbing performance to determine whether this is a determining factor between levels. The purpose of this study was to evaluate the F-V profile on different speed climbers' ability (national vs international). We hypothesized that international climbers may have a different F-V profile to national level climbers.

METHODS:

A total of 26 speed climbers participated in this study divided into two groups (International level n=9 and national level n=17). The participants performed pull ups and squat incremental tests in the same day in a non-competitive period where velocities performed with different loads were collected using a lineal encoder to obtain the F-V profile variables (F0, V0, Pmax and FV slope) in addition to the repetition maximum value (1RM).

RESULTS:

We found significant differences in F0 and 1RM in pull-ups ($p<0.05$) between level groups after performing a two-way ANOVA. However, we found no significant differences between groups in any of the variables obtained from the squat F-V profile. After performing a Pearson correlation, we found significant ($p<0.05$) and strong correlations between running time and 1RM (pull-ups and squat) and F0 and FV slope in pull-ups.

CONCLUSION:

Climbers with better climbing performance showed a higher F0 despite no difference in peak power, therefore strength training in national climbers should be focused on improving the F0 (i.e., lifting heavy weights rather than ballistic movements with light weights (4)). Moreover, there was significant correlation between performance (time) and squat 1RM, but without significant differences between groups, so it does not appear to be an indicator of speed climbing performance.

References

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