Stretching the limits of maximal voluntary eccentric force production in vivo

Daniel Hahn

PII: S2095-2546(18)30044-9
DOI: 10.1016/j.jshs.2018.05.003
Reference: JSHS 457

To appear in: *Journal of Sport and Health Science*

Please cite this article as: Daniel Hahn , Stretching the limits of maximal voluntary eccentric force production in vivo, *Journal of Sport and Health Science* (2018), doi: 10.1016/j.jshs.2018.05.003

Note: This is an invited special issue article.

Review

Stretching the limits of maximal voluntary eccentric force production *in vivo*

Daniel Hahn[1,2]

[1]Human Movement Science, Faculty of Sport Science, Ruhr-University Bochum, Bochum 44801, Germany

[2]School of Human Movement and Nutrition Sciences, University of Queensland, Brisbane 4072, Australia

Corresponding author: Daniel Hahn

E-mail: daniel.hahn@rub.de

Running title: Eccentric force production *in vivo*

Highlights

- Maximum voluntary eccentric forces can exceed maximum isometric forces at the same muscle length by a factor of 1.2–1.4, provided that the experimental conditions result in active fascicle stretch during the eccentric contractions.
- Muscle fascicle length, velocity and stretch amplitude all interact to determine voluntary eccentric force capacity.
- Apparent neural inhibition during maximal voluntary eccentric contractions has not been confirmed under conditions where eccentric forces exceed isometric forces at identical muscle length.
- The reduction in voluntary eccentric force capacity relative to the eccentric forces obtained from electrically stimulated contractions and from isolated muscle preparations remains unclear.

Received 31 October 2017; revised 2 January 2018; accepted 26 March 2018