

Acute effects of static stretching in vertical jump performance

Vitor Ferreira¹, Rui Costa²

¹School of Health Sciences, University of Aveiro (ESSUA), Portugal, v.ferreira@ua.pt

²School of Health Sciences, University of Aveiro (ESSUA), Portugal, rcosta@ua.pt

ABSTRACT

BACKGROUND: Static stretching has been widely used as a flexibility training and preparatory method for physical activities^[1]. However, in recent years several studies reported contradictory assumptions about the positive^[2] or negative^[3,4] impact of static stretching on vertical jump performance. Objective: To understand the acute effects of static stretching on vertical jumping performance, in particularly concentric and eccentric maximum force peaks, jump height, flight time and force development ratios. **METHODS:** A quasi-experimental, cross-over and randomized study was designed. Data were collected in two sessions at least with 48 hours apart. In each session, three countermovement jumps were collected before and after the experimental or control protocol in a randomized order. The experimental protocol consisted of 3 sets of 30 seconds of static stretching in the quadriceps and gastrocnemius. The control protocol consisted of 6 minutes in a sitting position. Data were collected on an AMTI Force Platform (AMTI Optima HPS, Watertown, USA) and analyzed in AcqKnowledge 4.0 software (Biopac Systems, Canada). **RESULTS:** In this study participated 20 female athletes of amateur sports. Statistically significant differences ($p < 0.05$) were found: more concentric force, power and acceleration; less eccentric force, maximum height and velocity after the experimental protocol. There were no significant changes in the control protocol. **CONCLUSION:** The training of static stretching seems to induce immediate effects on vertical jump performance in a contradictory way. That can be explained by a change in the force production strategy in the stretching / shortening cycle.

Keywords: *Countermovement, jump, static stretching, performance*

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