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Authors: Felipe Costa Alvim, Paulo Roberto Garcia Lucareli, Luciano Luporini Menegaldo

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Predicting muscle forces during the propulsion phase of single leg triple hop test

Felipe Costa Alvim[1*], Paulo Roberto Garcia Lucareli[2], Luciano Luporini Menegaldo[1]

1- Biomedical Engineering Program, COPPE, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

2- Department of Rehabilitation Science, Human Motion Analysis Laboratory, Universidade Nove de Julho, São Paulo, Brazil

*Corresponding author, phone: +55 (21) 3938 8629; fax: +55 (21) 3938-8591; e-mail: felipe.alvim@gmail.com

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Research Highlights

- Muscle force was estimated based on an inverse dynamics analysis of the propulsion phase of single leg triple hop test using Computed Muscle Control (CMC) and Static Optimization in OpenSim.
- Joint torques are plausible and muscles synergies from both methods were coherent with the measured EMG.
- Static Optimization associated with Residual Reduction Analysis seems to slightly outperform CMC estimations when compared to EMG profiles.

Abstract

Functional biomechanical tests allow the assessment of musculoskeletal system impairments in a simple way. Muscle force synergies associated with movement can provide additional information for diagnosis. However, such forces cannot be directly measured noninvasively. This study aims to estimate muscle activations and forces exerted during the preparation phase of the single leg triple hop test. Two different