

عنوان مقاله:

Effect of considering stability requirements on antagonistic muscle activities using a musculoskeletal model of the human lumbar spine

محل انتشار:

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خلاصه مقاله:

The recruitment pattern of trunk muscles is determined using a three-dimensional model of the spine with two joints and six symmetric pairs of muscles in which both equilibrium and stability requirements are satisfied. Model predictions are verified using Anybody Modeling System (AMS) and Abaqus. The model is used to test the hypothesis that antagonistic muscle activities are necessary for the spinal stability. The model with stability constraints predicts muscle activities greater than those predicted without stability consideration. In agreement with experimental data, the stability-based model predicts antagonistic muscle activities. It is shown that spinal stability increases with trunk flexion and further improves at heavier tasks.

کلمات کلیدی:

Lumbar spine , Musculoskeletal modeling , Muscle recruitment , stability

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