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Contributions of individual muscles to the sagittal- and frontal-plane angular accelerations of the trunk in walking

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Abstract

This study was conducted to analyze the unimpaired control of the trunk during walking. Studying the unimpaired control of the trunk reveals characteristics of good control. These characteristics can be pursued in the rehabilitation of an impaired control. Impaired control of the trunk during walking is associated with aging and many movement disorders. This is a concern as it is considered to increase fall risk. Muscles that contribute to the trunk control in normal walking may also contribute to it under perturbation circumstances, attempting to prevent an impending fall. Knowledge of such muscles can be used to rehabilitate an impaired control of the trunk. Here, angular accelerations of the trunk induced by individual muscles, in the sagittal and frontal planes, were calculated using 3D muscle-driven simulations of seven young healthy subjects walking at free speed. Analysis

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