

Muscle force estimation during gait using Angle-EMG-Force relationship

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Measuring the muscle force during gait can provide crucial knowledge for clarifying the walking mechanism and preventing injuries. However, non-invasive muscle force measurement is a major challenge in biomechanics. Previous research has investigated the relationship between the amplitude of electromyography (EMG) and muscle force. By examining the EMG–force relationship of each muscle, the generated muscle force can be measured on the basis of the EMG amplitude during gait. This study aimed to investigate the angle–EMG–force relationship of lower limb muscles and estimate the muscle force during gait. The EMG and muscle force were measured in a static muscle force measurement task, and the angle–EMG–force relationship was analyzed based on these data. The results indicate that the muscle force can be estimated using the angle–EMG–force relationship during gait.