The Response of Upper Limb Prosthesis Users to a Simulated Trip

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ABSTRACT

Nearly half of persons with major upper limb loss (ULL) experience at least one fall per year and almost a third will report an injury due to their most recent fall. Notably, 25% of falls result from a trip and use of an upper limb prosthesis increases likelihood of frequent falls by six times. Therefore, to understand the mechanisms underlying locomotor stability of persons with ULL, this study characterized the postural control responses of persons with ULL to a simulated trip and assessed effects of prosthesis use on that response. Participants with unilateral transradial amputation completed perturbation trials involving an unexpected, rapid treadmill disturbance while walking. Results suggest that participants may have experienced greater challenge to recover from the perturbation while wearing their prostheses and when the perturbation was delivered during impaired limb stance.