
Effects of audio perturbation on walking resilience in young and older adults

Antoine Dufourneau^{*1,2}, Loic Damm², Guillaume Tallon², Nicolas Sutton-Charani¹, and Hubert Blain^{1,3}

¹EuroMov Digital Health in Motion – IMT Mines Ales, Université de Montpellier, Université de Montpellier, IMT Mines Alès – France

²BeatHealth – EuroMov, Univ. Montpellier, Montpellier, France – France

³CHU Montpellier - Service Gériatrie – Centre Antonin Balmès - CHU Montpellier – France

Résumé

Walking in a natural environment involves various challenges (i.e., surface change) that individuals need to control to maintain balance and prevent falls. One of the most widespread properties of locomotor behavior that support this process is named resilience : the capacity to resist and recover after a disturbance. Although falls represent a major health concern in older people, resilience has not yet been studied in this population. The study aims to characterize the effect of age on locomotor resilience when people have to walk in synchrony with a periodic metronome presenting two temporal tempo alterations (+ and - 25%). We recruited 17 young adults, 17 older people with normal physical functioning (Timed Up and Go test (TUG) < 12 s and the Short Physical Performance Battery (SPPB) > 10) and 17 older adults with less physical performances. Our hypothesis is that using a method to quantify center-of-mass (COM) recovery time, the prioritization of COM recovery over gait synchronization decreases and COM recovery time increases with age and with declining physical performance. These results will potentially provide insights into the effect of both " normal " and " less successful " aging on the resilience of older adults, as well as the impact of imposing a dual task (walking and synchronization) when assessing their locomotor response.

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*Intervenant

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