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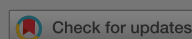
Research Articles

# Trunk, Head, and Step Characteristics During Normal and Narrow-Based Walking Under Deteriorated Sensory Conditions

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## ABSTRACT

The ability to maintain stability in the frontal plane (medialateral direction) while walking is commonly included as a component of motor performance assessment. Postural control in the frontal plane may deteriorate faster and earlier with increasing age, compared to that in the sagittal plane (anteroposterior direction). Fifteen young (20–30 y) participants were recruited to investigate the effects of narrow-based walking on postural control. Somatosensory evoked responses decreased with age, and vestibular evoked myogenic potentials (VEMP) were recorded in both age groups to assess the effect of narrow-based walking on the vestibular system. The results showed that narrow-based walking condition (by 43.62%) but not in normal walking condition. Older participants

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adopted a more cautious strategy characterized by lower walking speed when walking on a narrow base and exhibited deteriorated integrative ability of the CNS for head control. Accurate lower limb somatosensation may play a critical role in narrow-based walking.

Keywords: gait head control trunk control step characteristics sensory integration

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