The effect of moving visual scene on posture stability in the elderly and subjects with mild cognitive impairment.

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Ability to maintain balance in upright stance is gradually worsening with aging and even more obvious it is associated with dementia. The reasons of disequilibrium are not fully understood. The purpose of our study was to investigate posture stability of elderly and patients with mild cognitive impairment (MCI) to a moving visual scene. Visual scene moved in sagittal (towards or from a subject) or frontal plane (rotation to right or left). Postural responses were recorded by posturography platform for 50 s. Measurement consists from 10s quiet standing, followed by dynamic visual stimulation for 20s and post stimulation period for 20 s. Total path of center of pressure COP, mean sway velocity and mean sway amplitude were analyzed separately for every measured period. Results showed that patients with MCI were less stable than healthy elderly subjects, when experiencing a moving visual scene. However, the difference between patients and elderly subjects were even greater after visual stimulation. The patient posture balance did not reach the same level than before stimulation. Total path of COP and sway velocity mostly reflect balance differences between groups. The findings showed that posture stability in patients was more influenced by dynamic visual scene than in the elderly. Patients with MCI appear to have problem with solving sensory conflict. They are less capable to re-weighting sensory information and have to exert more effort to keep balance of upright posture than healthy elderly.

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