

Sensory contributions to balance control: effects of ageing and implications for falls risk in older people

Stephen Lord, Prince of Wales Medical Research Institute, Sydney

Adequate vision, vestibular function and peripheral sensation underpin balance control. In normal healthy people there is appropriate multi-sensory integration and significant redundancy which allows for protection against the risk of falls. However, age-related declines occur across all sensory modalities, and this has implications for balance control and falls in older age. This paper will describe important visual (contrast sensitivity, depth perception, visual field size), peripheral (touch sensitivity, joint position sense) and vestibular (vestibular optical and spinal reflexes) sensory modalities that are critical for standing and walking balance. It will then describe age-related changes and discuss the relative contributions of each sensory system to balance control. Finally, the paper will present findings on how impairments in each sensory system contribute to the risk of falls in older people and those with clinical problems that differentially affect a sensory system - i.e. macular degeneration (vision), diabetes (peripheral sensation), and vestibular disease.

Biographical Summary

Professor Stephen Lord, PhD, DSc
Senior Principal Research Fellow
Prince of Wales Medical Research Institute
Barker Street, Randwick, Sydney, NSW, Australia
Telephone: 61-2-9399-1061; Fax: 61-2-9399-1065
Email: S.Lord@powmri.edu.au

Professor Stephen Lord is a Senior Principal Research Fellow at the Prince of Wales Medical Research Institute in Sydney, Australia. His research interests include the identification of risk factors for falls in older people and the evaluation of fall prevention strategies. He has co-written two editions of a research book "Falls in Older People – risk factors and prevention strategies". Updated in 2007, this work comprehensively summarizes the research evidence base undertaken in this field.