

# Commentary to “Reciprocal influences between cognitive decline and vestibular processing”

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We wish to comment upon a letter to the editor regarding our work, “Dizziness in patients with cognitive impairment” [1] from Alessandro Micarelli and coworkers. With their interest in the close connection between balance and higher cognitive processes, Micarelli and coworkers have studied the integration rearrangement in patients with unilateral vestibular hypofunction during cognitive decline, showing that there are progressive cognitive-related difficulties in central processing of postural sway in patients with peripheral vestibular hypofunction [2]. Indeed, the results of Micarelli et al seem to corroborate our current study highlighting significant interference between postural stability and higher cognitive ability in association with increased perception of dizziness [1]. Vestibular-related dizziness among patients with cognitive decline is not only due to their peripheral vestibular disorder, but also due to a central dysfunction involving the pathways from the vestibular nucleus to limbic and cortical regions related to both cognition and orientation [3]. Central cognitive domain interference with balance and

sensory reweighting is also an important factor determining central neuroplasticity and the response to vestibular rehabilitation [4]. Future research investigating the complex interactions among the visual, vestibular, cognitive, and balance systems is warranted.

## References

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- [4] A. Micarelli, A. Viziano, B. Micarelli, I. Augimeri and M. Alessandrini, Vestibular rehabilitation in older adults with and without mild cognitive impairment: Effects of virtual reality using a head-mounted display, *Arch Gerontol Geriatr* **83** (2019), 246–256.

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