

## Methods

VEMP were recorded in 8 healthy volunteers without neither ontological nor neurotological disorders. Method A: Averaged raw wave were obtained by 100 times sound stimuli. The normalized amplitude was determined from amplitude of averaged raw wave divided by the integral value of 20 msec before stimulus of rectified raw wave. Method B: A hundred raw waves were obtained by sound stimuli. Root mean square (RMS) values of 20 msec before stimulus were obtained in each stimulus. The normalized waveform demanded it from the average of the wave which divided each raw wave by RMS value.

## Results

The mean asymmetry ratio of subjects was  $13.6 \pm 12.2$  on method A and  $10.8 \pm 10.1$  on method B. The former was slightly smaller than the later, however there was not significant difference.

## Conclusion

The accurate normalization for cVEMP may be obtained from method B. Method B requires specific signal processing devices but method A does not. Method A provides us enough accurate value in clinical use.

## PS 482

### Balance and Dizziness Problems and Associated Risk Factors among Older Adults: the AGES-Reykjavik Population-Based Cohort Study, 2002–2011

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## Introduction

Balance and Dizziness problems (BDP) are among the most common reasons for a visit to a physician's office for adults of all ages.

## Objective

Estimate prevalence of BDP and falling among older adults and identify risk factors associated with BDP and falling in older adults.

## Methods

The Age, Gene/Environment Susceptibility–Reykjavik Study (AGES-RS I) 2002–2006, interviewed and examined a population-based cohort of 5,764 adults aged 66–96 years. Five years later, 3,411 surviving subjects were followed-up in AGES-RS II. Participants were asked about problems during the last 12 months with spinning or vertigo sensations (vertigo); floating, spacey, or tilting sensations (floating); light-

headedness without a sense of motion (light-headedness); feeling that one will pass out or faint (fainting); blurring of vision when moving head (blurred vision); or feeling off-balance or unsteady (unsteadiness). BDP was positive if respondents said 'yes' to any of the above symptoms. Complete information for BDP was obtained from 2,844 participants. We used logistic regression to calculate odds ratios (OR) and 95% confidence intervals (CI).

## Results

In the AGES-RS II cohort, 72 or more years of age, BDP prevalence was 39.9% (35.3% in males, 43.6% in females). The prevalence of each symptom was: vertigo 16.5%, floating 3.1%, light-headedness 10.4%, fainting 7.7%, blurred vision during head movement 3.6%, and unsteadiness 28.6%. BDP symptoms that were most bothersome were unsteadiness 54.8% and vertigo 28.8%. After multivariable adjustment, risk factors independently associated with increased BDP included: memory loss last 12 months (OR=1.94; CI:1.49–2.54); diabetes (OR=1.43; CI:1.00–2.04); hypertension (OR=1.24; CI:1.02–1.52); coughing-up phlegm in the morning during winter (OR=1.64; CI:1.13–2.37); numbness/sensory loss of complete body side or limb (OR=2.54; CI:1.72–3.76); hip pain, aching or stiffness (OR=1.40; CI: 1.09–1.79); joint pain, aching or stiffness on most days (OR=1.53; CI:1.24–1.88); having fallen and landed on the floor (OR=1.78; CI:1.42–2.24); tinnitus (OR=1.31; CI:1.04–1.66); and self-reported hearing loss (OR=1.31; CI:1.07–1.60). Prevalence of falling during the last 12 months was 23.0% (31.4% in males, 17.4% in females). Of those who fell more than once in the last year, 70.2% reported BDP. After adjusting for confounders, BDP was significantly associated with risk of falling (OR=1.51; CI:1.14–2.00).

## Conclusions

Dizziness is a broad term used to describe a variety of sensations. This study is based on specific characterization of BDP symptoms. In older adults, BDP is common, disabling, costly, and it confers greatly increased risk of falling.

## PS 483

### The Association Between Vestibular Function and Visuospatial Ability in Individuals with Dementia

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## Background

There is growing evidence of an association between vestibular dysfunction and cognitive impairment, particularly with respect to the cognitive domain of visuospatial ability. Visuospatial impairment is one of the most common deficits in dementia. We sought to assess the association between vestibular function and visuospatial function among patients with cognitive impairment (including dementia) to further explore this potential link. This represents one of the first studies of vestibular function in patients with dementia, a critical public health problem.



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