

## **N-REM SLEEP SLOW OSCILLATIONS AMPLITUDE AND DENSITY IN THE YOUNG AND MIDDLE-AGED MEN AND WOMEN**

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**Introduction:** High level of neural synchronisation in N-REM sleep is detectable with the EEG as large amplitude slow-waves (SO). Aging is associated with lower slow-wave activity (SWA; spectral power between 0.5-4.5 Hz). Compared to men, women show higher SWA. However, it is still unknown whether age/sex-related differences in SWA are associated to changes in SO density, SO amplitude or both. We used an automatic detector to assess age and sex differences in SO.

**Methods:** Eighty-seven healthy volunteers with no sleep disorders were separated in two groups: Young (22W, 26M; 23.3y  $\pm$ 2.4), and Middle-aged (21W, 18M; 51.9y  $\pm$ 4.6). SO on Fp1, F3, C3 P3 and O1 were automatically detected during N-REM using published criteria (Massimini et al. 2004). ANOVAs were performed on SO density (nb/min) and amplitude.

**Results:** Compared to young subjects, middle-aged subjects showed lower SO density in all derivations but this effect was less prominent in FP1. Age-related decrease in SO density was more prominent at beginning of the night. For SO amplitude, middle-aged men showed lower SO amplitude than young men in all derivations but this effect was less prominent in O1. Middle-aged women showed lower SO amplitude than young women and this effect did not differ between derivations. Men showed lower SO amplitude than women in the frontal derivation only.

**Conclusion:** In conclusion, effects of aging and sex differed on SO amplitude and density. While age-related decrease in SO density was less prominent in anterior area, age-related decrease in SO amplitude was less pronounced in posterior area (O1) in middle-aged men. Age effects on SO density were more prominent early in the night while age effects on SO amplitude were constant across the night. Sex differences were only observed on SO amplitude and constant across the night. These results suggest different neurophysiological mechanisms underlying age and sex effects on SO.

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