

# Shifting of phase-angle for diagnostics of sleep-related breathing disorders

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## Summary

### Question:

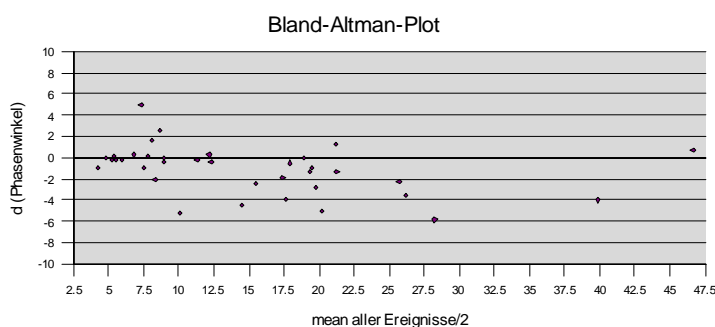
We analyzed if breathing disorders can be identified by measuring the signals of phase-angle-shifting (periodic elapsed procedures with the same frequency, where the zero-value-trial appears at staggered moments) of thorax- and abdomen-belt.

### Patients and Methods:

All data, both the cardio-respiratory polysomnographies that were recorded in a sleep laboratory during a consecutive period of 6 days and analyzed by hand acc to the DGSM standards and the generated quantity of obstructive and central breathing disorders that were calculated by signals from thorax and abdomen-belts via phase-angle-shifting where compared to each other.

### Results:

There was data available from 36 patients (10 women and 26 men, age  $58 \pm 13$  years, BMI  $31 \pm 4$  kg/m<sup>2</sup>, 14 measurements without and 22 measurements with CPAP). The generated breathing-disorder-index acc. To the DGSM-criteria (obstructive / mixed / central apnea, hyponea and flow-limitations) was at  $16 \pm 10,8$ /hour, the index acc. To the phase-angle-shifting was at  $13,9 \pm 9,1$ /h; both results correlate with  $r = 0,911$ . A Bland-Altman-Plot illustrated the results:



### Conclusion:

The phase-angle-shifting is a sensitive and very suitable instrument for the identification of sleep-related breathing disorders.

**Keywords:** sleep-related breathing disorders, shifting of phase-angle

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