

# How dynamic is the continuous tinnitus percept?

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**Objective:** Subjective tinnitus is defined as an auditory perception in the absence of any physically identifiable source for it. About 5-10% of the population report a continuous perception of the tinnitus sound – but how continuous is this perception? Is the tinnitus constantly “on”, or are there also periods where the tinnitus is perceived less? Indeed, more than 60% of the chronic tinnitus subjects report a variability of the tinnitus perception between days. The heterogeneity of this variability is currently largely unexplored.

**Methods:** In order to measure this within-person variability of tinnitus perception, we developed an experience sampling application running on smartphones that is able to track the individual tinnitus perception and distress during the day under real world conditions. In the first part of the talk, we want to present preliminary results of this study. With the second part of the talk we want to concentrate on the variability of neuronal activity in the auditory cortex.

**Results:** Chronic tinnitus is usually associated with a decrease of the alpha frequency oscillatory power in temporal areas. Here we show, that also the moment-to-moment variability of the alpha activity is largely reduced in chronic tinnitus. Most importantly, it can be shown that this neuronal variability is associated with the tinnitus duration. Subjects with a longer history of tinnitus show less alpha variability in auditory regions. Preliminary data on the variability of the tinnitus perception will be presented.

**Conclusion:** We propose that the assessment of both, the neuronal variability and the perceptual variability in chronic tinnitus are an important tool for the identification of tinnitus subtypes.