Online ILD training for tinnitus

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Tinnitus is a phantom sensation of sound. Although no specific neural mechanism has been identified as the cause of tinnitus, hearing impairment is thought to set in motion a chain of neurophysiological changes along the auditory pathway, resulting in the perception of tinnitus. Currently, there exist no objective methods for diagnosing tinnitus; instead, subjective questionnaires and rating scales are used in characterizing the condition. While neuroimaging has provided much insight into the electrophysiological correlates of tinnitus, contributions from co-occurring symptoms, such as depression and hearing loss, have prevented drawing definite conclusions about a possible neural substrate for tinnitus.

We aim to bridge the gap between questionnaires and purely electrophysiological methods by using auditory localization tasks as a proxy for tinnitus-specific changes in the auditory chain. Our first study showed a differing effect of background noise in a vertical localization task between tinnitus subjects and hearing-loss–matched controls. Currently, we are investigating the effects of auditory training in a horizontal localization discrimination task, based on the interaural level difference (ILD) cue. The online platform for the at-home training, written in Javascript with the Web Audio API framework, will be introduced and the first pilot data from the study presented.