Background

Transcranial random noise stimulation (tRNS) has been shown to significantly improve visual perception\(^1,2\). Previous studies demonstrated that tRNS delivered over cortical areas acutely enhances visual contrast detection of stimuli when tRNS intensity is optimized for the individual\(^3\). However, it is currently unknown whether:

1. tRNS-induced signal enhancement could be achieved within different neural substrates along the retina-cortical pathway
2. the beneficial effect of optimal tRNS intensities can be reproduced within and between sessions.

Methods

We tested whether tRNS applied to the primary visual cortex (V1) and to the retina improves visual contrast detection measured with visual contrast threshold (VCT). We determined the optimal tRNS intensities for each individual (ind-tRNS) and restated the effects of ind-tRNS (i) within and (ii) between the sessions, as well as (iii) simultaneous effects of tRNS of V1 and the retina.

Conclusions

- V1 seems to be more sensitive than retina to tRNS-induced modulation of visual contrast processing
- The individual optimal tRNS intensity appears to vary across sessions