

# Abstract 21

## Scalp topography of lower urinary tract sensory evoked potentials

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### Einleitung:

Impaired lower urinary tract (LUT) afferents often cause LUT symptoms (LUTS). Assessment of such afferent pathways is possible using bipolar cortical sensory evoked potential (SEP) recordings during LUT stimulation. This study aimed to investigate the topographical distribution and microstates of LUTSEPs using different stimulation frequencies.

### Material und Methodik:

Ninety healthy subjects (18-36 years old, 40 females) were randomly assigned to one stimulation location (bladder dome, trigone or proximal, membranous (males only), distal urethra). Using a custom-made catheter, 0.5Hz, 1.1Hz, and 1.6Hz repetitive electrical stimulation (each 500 stimuli) was applied during 64 channel cortical LUT-SEP recordings. Marker setting was performed manually for P1, N1, P2 components of Cz-Fz and Cz-AvgRef recordings. Scalp field data and microstates were analysed using RAGU (Randomization Graphical User interface).

### Ergebnisse:

N1 and P2 topographies presented with central negativities and positivities with Cz in the respective minima and maxima. RAGU analyses revealed consistent microstates, frequency effects for topographical distribution (N1, P2) and decreasing map strength with higher stimulation frequencies (P1, N1, P2). Cz-Fz recordings reported a higher responder rate compared to Cz-AvgRef.

### Schluss:

LUTSEP topographies indicate central generators in the somatosensory cortex, which are not visible in a bipolar set-up. The observed frequency effect indicates fiber refractoriness upon higher frequencies. The multichannel approach allows assessing LUTSEP amplitudes more comprehensively and might therefore be sensitive to pathological changes and its underlying cortical generators. Applications in patients with LUTS are needed to further investigate this biomarker.