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Neural plasticity involves reorganization of synaptic connections and represents the brain's capacity to reorganize its function in response to a challenge or to a stimulus. Plasticity implies changing synaptic activity and connectivity and the underlying mechanisms are long-term potentiation (LTP) and long-term depression (LTD). One theory describes schizophrenia as a disorder of impaired neural plasticity. Recently, non-invasive brain stimulation techniques have garnered much attention for their ability to modulate plasticity and treat schizophrenia. Currently, different non-invasive brain stimulation techniques (tDCS, rTMS, TBS) allow to investigate cortical plasticity on a system level and these techniques are used in different experimental clinical trials. The pattern of the available results provides evidence for a specific plasticity deficit in schizophrenia patients which might be associated with a hyperglutamatergic state, dysfunctional NMDA receptors and dysfunctional intracortical inhibitory networks in both hemispheres. These findings may reflect a reduced signal-to-noise ratio, a disturbed filter function and dysfunctional information processing in schizophrenia patients. Future investigation need to address questions of improved response rates to non-invasive brain stimulation and of practical issues like stimulation duration, stimulation intensity and the time of intervention. This talk will present results from human-physiology studies and from clinical trials and link the results. However, future investigation need to address questions of improved response rates to non-invasive brain stimulation and of practical issues, which will be discussed in the talk.