**Brain stimulation in minimal consciousness states**

Neuromodulation techniques, aiming at normalizing the neurophysiologic disturbance of a brain lesion or deficit, have been studied for years trying to modulate brain activity to treat several neurological diseases. The field of non-invasive brain stimulation offers a valuable alternative the improve the recovery of severely brain injured patients with disorders of consciousness, a population that lacks effective treatment options, especially at the chronic stage. In this presentation, we will describe a non-invasive brain stimulation technique, namely transcranial direct current stimulation (tDCS), as therapeutic options for patients with DOC. The first studies, targeting the left prefrontal cortex, have shown encouraging results, with significant behavioral improvements, in both acute and chronic patients. Beside behavioral improvements, mechanisms underlying the effects of these neuromodulation techniques need to be further investigated.

The existing therapeutic leak in the field of DOC is currently getting challenged by recent data supporting that some DOC patients could benefit from some rehabilitative interventions (surgery, pharmacologic agent or transcranial stimulation) reviewed above. Larger-scale studies with higher number of patients of various pathologies, including neurophysiological assessments, are ongoing, in order to better comprehend the underlying neuromodulatory effects of tDCS and the induced neuroplastic changes in severely injured brains.