

DESCRIPTION FOR THE GENERAL PUBLIC

Within the last 20 years the interest in usage of the transcranial magnetic stimulation in neurology and psychiatry has increased exponentially. Further, the number of patients with neurological and psychiatric disorders has also increased. The TMS can be an effective form of a treatment or a rehabilitation method in many of these cases. Currently available imaging methods do not allow to fully reveal the influence of the TMS on a human brain cortex activity. Attempts to image a brain cortex activity with the functional magnetic resonance technique during the TMS stimulation have been made. A combination of these two methods is a great technical problem. The aim of the project is to investigate an effect of the transcranial magnetic stimulation on a brain cortex tissue under normal and hypoxic challenge conditions. The project regards a basic research which includes development of the methodology of optical imaging of an influence of the transcranial magnetic stimulation on a cerebral cortex activity under hypoxia challenge conditions. The research will be carried out with a noninvasive high-resolution diffuse optical brain tomography. This method allows for imaging of a cerebral cortex activity with resolution comparable to a functional magnetic resonance imaging. The research will allow to investigate an influence of the transcranial magnetic stimulation and hypoxia challenge on different areas of a cerebral cortex.