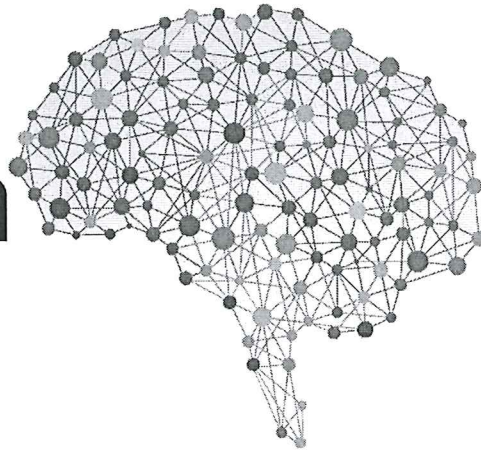


Neuro Visionen 10



Sep
26th,
2014

The NeuroVisionen conference is the annual meeting of NeuroNRW, a scientific network of 11 institutions with the aim to promote neuroscience in North Rhine-Westphalia (NRW).

Traditionally, the NeuroVisionen conference focuses on the promotion of young neuroscientists. NeuroVisionen provides a platform for young scientists to present their current neuroscientific work (as talks or posters), to get to know neuroscientists from the other NeuroNRW sites, to exchange ideas and possibly start co-operations.

Moreover, the young scientists are introduced to the neuroscience being performed at the NeuroNRW site that hosts the NeuroVisionen conference. Therefore, the Jülich site is proud to host the 10th NeuroVisionen conference in 2014.

With a warm welcome,

Peter H. Weiss-Blankenhorn

(Speaker of the Neuroscience Network North Rhine-Westphalia, NeuroNRW)

Organizing team:

Christopher Doppler, Alexander Geiger & Linda Wilbers

Venue: Lecture Hall and Foyer at Central Library (ZB), Forschungszentrum Jülich

Persistent post-concussive symptoms are accompanied by decreased brain oxygenation using functional NIRS imaging

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Mild traumatic brain injuries are common incidents in sports and there is a growing list of (prominent) athletes who had to end their careers prematurely due to persistent post-concussive symptoms. Diagnostic Methods are considered a major concern in determining when an athlete is ready to return to training and competition. In the present study we examined previously reported controversies of brain activation patterns during memory tasks in prefrontal brain regions using functional NearInfraRed Spectroscopy (fNIRS). Seventeen concussed volunteers and eight non-concussed control subjects matched in age participated in the study. Participants were first assessed with a clinical examination and the Sport Concussion Assessment Tool 2 (SCAT2), and subsequently they underwent fNIRS measurements to investigate the hemodynamic response of prefrontal brain regions during a working memory task. The results demonstrated decreased working memory performance amongst concussed subjects with post-concussive symptoms, which were accompanied by decreased brain oxygenation above prefrontal brain regions of both hemispheres. The oxygenation of the dorsolateral prefrontal cortex (DLPFC) of the left hemisphere correlated negatively with the severity of post-concussive symptoms. The DLPFC of the right hemisphere showed decreased brain oxygenation for the concussed group suffering from post-concussive symptoms when compared to the concussed group with minor symptomatology and the healthy control group during the visual abstract memory task design. While the left hemispheric DLPFC was closely related to symptom severity, decreased changes of oxygenation within the right hemispheric DLPFC amongst participants suffering from post-concussive symptoms seem to be additionally influenced by hemispherically specialized functions. An association appears to exist between decreased brain oxygenation, low performance on working memory tasks, and increased symptom severity scores after mild traumatic brain injury. We therefore conclude that fNIRS provides a valid method to investigate the origin of persistent post-concussive symptoms.