

## **Interdisciplinary Autumn Workshop Series on NEUROGES® and functional Near Infrared Spectroscopy - Analysis of Body Movement in Action and Expression**

This autumn, the Department of Neurology, Psychosomatic Medicine, and Psychiatry of the German Sport University Cologne in collaboration with NIRx Berlin and the Berlin Gesture Center offers an interdisciplinary method workshop series for the behavioural and neuropsychological analysis of functional and expressive body movement. Explicit goal-oriented actions as well as implicit nonverbal behaviour including gesture and self-touch are the focus of the workshop series.

For the objective and reliable analysis of body movement the workshops train in *NEUROGES®* and for the analysis of brain activation in *functional Near Infrared Spectroscopy (fNIRS)*. The highly innovative combination of the two methods enables to clearly identify psychologically valid behavioural phenomena in the ongoing stream of body movement and to explore the corresponding patterns of brain activation.

The workshop series comprises NEUROGES®, fNIRS, and method combination workshops, which can be booked independently of each other. Since these are hands-on workshops no hybrid format will be offered. The workshops are suited for researchers of all scientific disciplines investigating body movement and kinesic behaviour as well as for neuroscientists. The temporal gap between workshops 1-3 (September 2 - 6, 2024) and workshops 4-5 (November 12 – 15, 2024) offers researchers to acquire the NEUROGES certificate as a basis for method combination with fNIRS.

**Lecturers:** Maximilian Augenstein, Janik Dürselen (M.Sc.), Armin Heinecke (PhD), Laura Ketter (M.Sc.), Simon Kieffer (M.A.), Hedda Lausberg (Univ.-Prof. Dr. med.), Sabrina von Au (M.A.)

### **Venue:**

German Sport University Cologne  
Department of Neurology, Psychosomatic Medicine, and Psychiatry  
Am Sportpark Muengersdorf 6  
D-50933 Koeln, Germany

**Registration deadline:** August 27, 2024

**Contact:** [c.klabunde@dshs-koeln.de](mailto:c.klabunde@dshs-koeln.de)

**The number of participants is limited to 10.**

### **Workshop fee:**

400 €, reduced 300 € (for students) for the whole package Workshops 1-5

200 € for Workshops 1, 3, and 4 each

100 € for Workshops 2 and 5 each

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### **Description of the five workshops**

#### **Workshop 1: Nonverbal Behaviour**

**September 2 – 3, 2024**

The ongoing stream of spontaneous whole body nonverbal behaviour that accompanies interaction, thinking and feeling is analysed with the NEUROGES Kinesic Module. The

objective and reliable analysis delivers individual and group kinesic profiles including a differentiated analysis of touching and self-touching behaviour, rest positions/poses, shifting, etc. The Kinesic Module provides information on self-regulation, embodied attention, complexity of mental processes and – when analysing two interacting individuals - on the quality of the interaction.

### **Workshop 2: Laterality and Hemispheric Specialisation**

***September 4, 2024***

The NEUROGES Laterality Module offers a precise and detailed analysis of bimanual coordination as well as on handedness. It thereby enables to infer hemispheric specialisation in the production of unimanual and bimanual movements. Furthermore, it allows for an identification of contralateral versus ipsilateral neural control. The module can be applied to hand/arm movements but likewise to foot/leg movements.

### **Workshop 3: Gesture and Action**

***September 5 – 6, 2024***

The NEUROGES Gesture and Action Module offers an objective and reliable identification of different gesture and action types, such as *emotion/attitude, emphasis, egocentric deictic, egocentric direction, pantomime, form presentation, spatial relation presentation, motion quality presentation, subject-oriented action, object-oriented action*, as well as *emblems/social convention*. The analysis also enables to detect gesture-speech mismatch and to examine aphasic individuals.

### **Workshop 4: Cerebral Activation**

***November 12 – 14, 2024***

Functional near infrared spectroscopy (fNIRS) offers a unique insight into functional activation changes in the human brain, specifically in a mobile setup. This allows researchers in many domains to explore the human brain “in action” within a realistic environment. After first explaining the background of the acquisition technique, we will demonstrate the measurement of a sample dataset. In the third segment, the preprocessing, analysis, and visualisation of fNIRS data will be explained and exhibited.

### **Workshop 5: Cerebral activation during body movement: NEUROGES – fNIRS method combination**

***November 15, 2024***

This highly innovative method combination enables to reliably explore the relation between psychologically valid behavioural units of body movement (see workshops 1 - 3) and brain activation patterns (see workshop 4). The method combination thereby overcomes current problems in brain imaging research on body movement behaviour that lack a differentiated classification of body movements, in particular of implicit expressive body movements. The NEUROGES – fNIRS combination enables to clearly attribute brain activation patterns to specific behavioural phenomena.