The multi-professional targeted approach of neurorehabilitation can enhance recovery of functional deficits beyond spontaneous recovery and consequently improve quality of life: Specifically tailored therapeutic interventions address very specific information processes in the brain, retrain skills and thereby improve performance and abilities step by step. As a consequence of training, centres within the brain responsible for these functions become effectively re-activated, functional re-organisation of the brain occurs and ensures long-term benefits of training therapy. The non-invasive brain stimulation techniques of repetitive or patterned transcranial magnetic stimulation (rTMS) can focally influence the excitability of specific brain areas and might promote these functional adaptations in concert with and potentially beyond training therapy. rTMS holds much promise as a potential therapeutic intervention in a wide range of neurological conditions. However, many questions need to be addressed before a more widespread use in these conditions. The academic programme of the Alfried Krupp Wissenschaftskollegs is made possible by financial support provided by the Alfried Krupp von Bohlen und Halbach-Stiftung, Professor Dr. h. c. mult. Berthold Beitz, a former Chairman of the Board of Trustees of the Alfried Krupp von Bohlen und Halbach-Stiftung, Professor Dr. h. c. mult. Berthold Beitz, and the European Union (ImpactG FP7-REGPOT-2008-1). The multi-professional targeted approach of neurorehabilitation can enhance recovery of functional deficits beyond spontaneous recovery and consequently improve quality of life: Specifically tailored therapeutic interventions address very specific information processes in the brain, retraining skills and thereby improve performance and abilities step by step. 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Thursday, September 2, 2010

17.00
Welcome Address
Bärbel Friedrich (Greifswald, Germany)
Academic Director of the Alfred Krupp Wissenschaftskolleg Greifswald
Conference Chair’s Address
Thomas Platz (Greifswald, Germany)
Opening Lecture
18.30
Reception and Buffet

11.30 — 12.30
Specificity and Modification of rTMS effects
Optimizing functional accuracy of TMS in cognitive studies: a comparison of methods
Alexander Sack
Faculty of Psychology and Neuroscience, Maastricht University
Optimizing stimulation parameters for theta burst stimulation applications
Walter Paulus
Clinical Neurophysiology, Georg-August-University Göttingen

Friday, September 3, 2010

9.00 — 12.30
Metabolic and haemodynamic effects of rTMS
Immediate and prolonged effects of theta burst stimulation (TBS) and conventional low-frequency rTMS on the rat cortex — concepts and overview
Klaus Funke
Institut für Neurophysiologie, Universität Bochum
Theta burst and conventional low-frequency rTMS differentially affect GABAergic neurotransmission in the rat cortex (GAD and Ca-binding proteins expression)
Alia Benali
Institut für Neurophysiologie, Universität Bochum
Neurochemical effects of theta burst stimulation
Charlotte Stagg
FMRI Centre, University of Oxford
Neural substrates of low-frequency rTMS during movement in healthy subjects and acute stroke patients.
A PET study
Angelique Gerdelas-Mas
INSERM U 825, Universités de Toulouse
Assessing the effects of TMS on brain activity in a quantifiable fashion by interleaved TMS/CASL (continuous arterial spin-labeling): Comparison of different rTMS protocols
Axel Thielscher
MPI for Biological Cybernetics, Tübingen
11.00 — 11.30
Coffee break

14.00 — 18.30
The complex relationship between voluntary movement and rTMS-induced plasticity in motor cortex
Gabrielle Todd
School of Molecular and Biomedical Science, University of Adelaide
The effect of continuous theta burst stimulation on circuits in the motor cortex and spinal cord and its modulation by physiological activity and a NMDA receptor agonist
Ying-Zu Huang
Department of Neurology, Chang Gung Memorial Hospital and Chang Gung University, College of Medicine, Taipei
Suppression of ipsilateral motor cortex facilitates motor skill learning
Masahito Kobayashi
Department of Neurosurgery, Saitama Medical University
15.30 — 16.00
Coffee break

11.30 — 12.30
Modulation of effects of iTBS applied over M1 by conditioning stimulation of the opposite M1
Patrick Raper
Max-Planck-Institut für Kognition- und Neurowissenschaften, Abteilung Kognitive Neurologie, Leipzig
TMS-jamming during complex movement performance — evidence for functional involvement in healthy subjects and stroke patients
Martin Lotze
Baltic Imaging Center, Diagnostische Radiologie und Neuroradiologie, Ernst-Moritz-Arndt-Universität Greifswald
Effects of TBS on motor performance and motor learning and its pharmacological modification
Orlando E.C. Swayne
School of Motor Neuroscience and Movement Disorders, Institute of Neurology, University College London
19.00
Social programme

Saturday, September 4, 2010

9.00 — 14.15
Clinical effects of rTMS
Curing the brain by applied neurophysiology — fact or fiction?
John Rothwell
Department of Motor Neuroscience and Movement Disorders, Institute of Neurology, University College London
Short- and long-term effect of rTMS on motor function recovery after acute ischemic stroke
Eman M. Khedr
Department of Neurology, Assiut University Hospital
Effects of ipsilesional and contralesional rTMS on motor recovery in cortical and subcortical stroke
Dennis A. Nowak
Klinik Kipfenberg, Neurologische und Neurochirurgische Fachklinik
Effects of paretical theta burst stimulation trains on visual attention and visual neglect
Thomas Nyffeler
Abteilung für kognitive und restorative Neurologie, Ernst-Moritz-Arndt-Universität Greifswald
Research with rTMS in the treatment of aphasia
Paula I. Martin, Margaret A. Næser
Harold Goodglass Boston University, Aphasia Research Center, Department of Neurology, Boston University School of Medicine and the Veterans Affairs
11.00 — 11.30
Coffee break

Effects of coupled rTMS and speech therapy on language and brain activation in subacute stroke patients
Ilona Rubi-Fessen
RehaNova Köln
High-frequency rTMS over the supplementary motor area improves bradykinesia in Parkinson’s disease
Masashi Hamada
Department of Neurology, Division of Neuroscience, Graduate School of Medicine, University of Tokyo
Cerebellar magnetic stimulation decreases levodopa-induced dyskinesias in Parkinson disease
Giacomo Koth
Laboratorio di Neurologia Clinica e Comportamentale Fondazione Santa Lucia, IRCCS, Rome
Efficacy and safety of bilateral continuous theta burst stimulation (cTBS) for the treatment of chronic tinnitus: a three-armed randomized controlled trial
Christian Plewnia
Neurophysiology & Interventional Psychiatry, Universitätsklinikum Tübingen
Influence of rTMS on depression and its symptoms
Jacqueline Höppner
Universitätsklinik für Psychiatrie und Psychotherapie, Rostock
Antidepressant effects of augmentative transcranial magnetic stimulation. Randomised multicentre trial
Carlo Schiozetti-Leunici
Universitätsklinik für Psychiatrie und Psychotherapie III, Ulm
14.00
Closing
Thomas Platz
BDH-Klinik Greifswald
Ernst-Moritz-Arndt-Universität Greifswald
14.15
Farewell lunch