

## Pre-Conference Courses for the [11<sup>th</sup> Vienna Int. Workshop on FES 2013](#) and [BMT 2013](#)

Four Pre-Conference-Workshops will be available on **Wednesday 18<sup>th</sup> 2013**, two of them in parallel in the morning and the other two in parallel in the afternoon.

Costs: 95€ (includes hand-outs, 2 coffee breaks, lunch)

Payment: During your registration via CATS or cash during the Workshops or at the Registration desk

Registration: Please send an eMail to Melitta Pichler ([melitta.pichler@meduniwien.ac.at](mailto:melitta.pichler@meduniwien.ac.at))

To help us planning please state which Workshops you want attend. (1-3 or 1-4 or 2-3 or 2-4)


Location: Medical University, Graz

Program:

<b>Wenesday 18<sup>th</sup> September, 2013</b>	
<b>09:00 – 12:00</b>	
<b>③</b>	<b>④</b>
<b>Basics of Magnetic Stimulation &amp; TMS</b>	<b>FES of Denervated Muscles – A Novel Therapeutic Option after Peripheral Nerve Lesion</b>
Dietmar Rafolt <sup>1</sup> , Monica Christova <sup>2</sup> , Eugen Gallasch <sup>2</sup> , Jörg Waldert <sup>3</sup>	Winfried Mayr <sup>1</sup> , Peter Biowski <sup>2</sup>
<sup>1</sup> Center for Medical Physics and Biomedical Engineering, Medical University of Vienna <sup>2</sup> Departement of Physiologie, Medical University of Graz <sup>3</sup> Landesnervenklinik Sigmund Freud Graz	<sup>1</sup> Center for Medical Physics and Biomedical Engineering, Medical University of Vienna <sup>2</sup> Schuhfried GmbH
In many cases magnetic stimulation is a helpful alternative to electrical stimulation. Moreover to investigate the motor system including motorcortex and motoneurons transcranial magnetic stimulation (TMS) is the standard method to generate action potentials without causing pain to the subject. Furthermore repetitive magnetic stimulation has the potential to stimulate peripheral nerves to produce strong therapeutic muscle contractions. In this course the technical, physiological and experimental basics of magnetic stimulation will be given. Participants are invited to make hands-on experiments on the extremities and motorcortex including m-wave recordings to determine various neurological parameters.	The workshop is designed as a hands-on workshop with a comprehensive introduction on physiological, clinical and technical basics, safety issues, handling of equipment and guidelines for supervised home based therapy. As FES of denervated muscles differs fundamentally from classical neuromuscular FES the main particularities are addressed in an open interactive discussion. The goal is to train qualified medical staff to a level that allows confident, safe and efficient clinical application of this novel method, and providing them a clear view on achievable therapeutic benefits, limitations and potential specific risks. <u>Learning objective:</u> Difference between upper and lower motor neuron lesion Equipment and electrical parameters for direct muscle stimulation Guidelines for clinical application / home-based therapy Therapeutic benefits, limitations and risks

Wednesday 18<sup>th</sup> September, 2013

13:00 – 16:00

<p style="text-align: center;">①</p> <p style="text-align: center;"><b>Implantable stimulators</b></p>	<p style="text-align: center;">②</p> <p style="text-align: center;"><b>Transcutaneous spinal cord stimulation</b> and its applications in neurophysiological studies and neuromodulation interventions</p>
<p>Hermann Lanmüller, Christoph Sommer, Lukas Kneisz, Ewald Unger, Manfred Bijak</p> <p> Competence Team for implanted Devices</p> <p>Center for Medical Physics and Biomedical Engineering, Medical University of Vienna</p>	<p>Ursula Hofstoetter, Karen Minassian, Simon Danner, Matthias Krenn</p> <p>Center for Medical Physics and Biomedical Engineering, Medical University of Vienna</p>
<ul style="list-style-type: none"><li>• Architecture and principle of operation: characteristic values and features of programmer, pulse generator and leads</li><li>• Implantable Pulse Generator (IPG) power management, Transcutaneous energy transmission, Data transmission, IPG controller, electrodes and connectors: principle, method's and limits</li><li>• From development to manufacturing by means of examples</li></ul>	<p>Transcutaneous stimulation of the lumbosacral spinal cord activates a subset of the same neuronal population as epidural spinal cord stimulation. Single stimuli elicit spinal reflexes in multiple lower limb muscles bilaterally in people with intact and altered CNS that can serve as test reflexes in neurophysiological studies. Current research investigates the applicability of continuous transcutaneous spinal cord stimulation in the rehabilitation of people with traumatic spinal cord injury (spasticity control, locomotor training). In the present workshop, we will present theoretical background, give a hands-on demonstration in an individual with intact CNS, and present pilot data of neuromodulation applications.</p>