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Modern Methods in Neurorehabilitation based on experience in Space-Neurology

It is a unique possibility to examine healthy human beings in the weightlessness with a diminished stimulation of the proprioceptive system. Special counter measures had to be used to preserve the disturbed brain functions in the real microgravity, called as Cosmonaut/Astronaut-Syndrome.

Similar symptoms can be observed in the simulated microgravity (head-down-tilt or dry-water-immersion method etc. and in long lasting bed stay, patients in coma, other severe neurological conditions, cardiac disturbances etc., as well as in elderly human beings without enough motion, called Bed Rest Syndrome. As symptoms primary muscle atrophies, polyneuropathy, posterior tract disturbances in some cases thalamic signs and the diminishment of vigilance and the psychomotoric reactions can be seen.

The study of the posterior tract dysfunction brings new information about the function of the proprioceptive system, basis of all our motoric activities as well as of the higher and highest human brain abilities. The countermeasures to preserve the Cosmonaut/Astronaut Syndrome can be used as new methods in neurorehabilitation, treating the motoric deficiencies but also the frontal lobe and temporal lobe symptoms and states of diffused brain damage, like dementia. With a special examination apparatus system using the functional magnetic resonance imaging method (fMRI) our research group (F.Gerstenbrand, St.Golaszewski et al) could discover a prompt activation of the sensorimotoric areas contra lateral after the vibrostimulation of the footsole, together with an activation effect in the thalamus, the frontal lobe and the temporal region, registered with the help of the BOLD effect.

New devices for neurorehabilitation are the vibro stimulation shoe constructed in Austria, the ADELI-System using cosmonauts trousers and the Korvit-System, simulating a gait-stimulation.



PROGRAMME

DANUBE NEUROREHABILITATION SYMPOSIUM



**SZTE-SZAB 131. NEUROLÓGIAI KERÉKASZTAL
SZEGED
26th NOVEMBER, 2009**

PROGRAMME OF THE DANUBE
NEUROREHABILITATION SYMPOSIUM
26th November, 2009
Szeged, Hungary

Chairpersons: Professor Franz Gerstenbrand and Professor
László Vécsei

13.00-13.30 **Why we need professional education in
neurorehabilitation?**

Professor Heinrich Binder, Wien

13.30-14.00 **Evidence-based modular motor therapy
concepts in neurological rehabilitation**

Professor Volker Hömberg, Meerbusch

14.00-14.30 **Mental recovery and social reintegration
following severe brain damage**

Professor Klaus von Wild, Münster

14.30-15.00 **Modern methods in neurorehabilitation
based on experience in Space-Neurology**

Professor Franz Gerstenbrand, Wien

15.00-15.20

Dr. István Szél és Dr. Gábor Jakab, Budapest

15.20-15.30 **Molecular genetic aspects of brain plasticity**

Dr. Katalin Jakab, Szeged

15.30- **Discussion**

The Symposium is supported by the Hungarian Society of
Neurologists and Psychiatrists and the Danube Neurology
Association