

RESEARCH GROUP OF THE WORLD FEDERATION OF
NEUROLOGY

Chairman: Gerstenbrand F., MD., Prof.

Mailing address: Rummelhardtg. 6/3, A-1090 Vienna/Austria
Phone: +43 - 1 / 405 52 03; Fax: +43 - 1 / 409 68 43
Email: F.Gerstenbrand@aon.at

Dr. Heinz Hasch
Diving International
Anton Baumgartnerstr. 44
A 1230 Wien
Austria

Dear Dr. Hasch!

The WFN Research Committee had a meeting in Honolulu on 2nd of April during the Annual Conference of the American Academy of Neurology. The different RGs submitted a report, a summary was published in the last Volume of the World Neurology, March 2003. The Report of 12 of the research groups is enclosed. Chair of the meeting of the research committee was Roger Rosenberg. We send You the total report of the Research Group, which was submitted to Dr. Rosenberg.

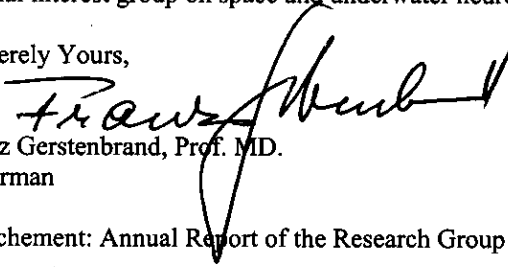
Concerning the report industrial and naval diving organisations are not interested to support clinical research. Sport diving without oxygen supply and snorkelling there is no scientific interest till now. Scuba diving is a new field in neurorehabilitation eg for incomplete spinal cord lesions as well as vertebral spine disturbances. A center in Austria organized by Dr. Heinz Hasch is offering a rehabilitation program for traumatic spinal cord lesions for patients with MS and with mild spasticity of the legs.

Hyperbaric oxygenation therapy (HBOT) is starting to be an established method in neurology for acute brain lesions (stroke, traumatic brain injury etc.) as well as for neuro-rehabilitation in patients after hypoxic cerebral states and in patients with cerebral palsy. A congress for HBOT was arranged in 12th to 16th July in Forth Lauderdale by R. Neubauer. In HBOT the main problem is to find more resonance in introducing the method in neurology and to organize a cooperation with a common programm for different scientific projects. The research group is preparing guidelines for the indication of HBOT in Neurology.

In space neurology only few centers are working. IBMP, Moscow shows furthermore the most activities in space neurology. Recently congress was organised in Berlin, on which leading scientists from Russia, Germany, Austria gave presentations. There was a trend to use the scientific results for the treatment in neurology especially in Neurorehabilitaiton.

The main demand is to ask for members, willing to be active in one of the three divisions and to organize workshops and symposia. In the HBOT subgroup workshops and symposia are carried mainly by Dr. R. Neubauer in Forth Lauderdale, in the space group mainly by I. B. Kozlovskaya and A. Grigoriev at the IBMP Moscow. The WFN research group on space and underwater neurology is in close cooperation with the EFNS special interest group on space and underwater neurology

Sincerely Yours,


Franz Gerstenbrand, Prof. MD.
Chairman


Walter Strühal, MD.
Scientific Secretary

Attachement: Annual Report of the Research Group on Space and Underwater Neurology.

Vienna 28/7/03



RESEARCH GROUP OF THE WORLD FEDERATION OF NEUROLOGY

SPACE AND UNDERWATER NEUROLOGY

20/03/2003/Prof.G/gray

Report of the Research Group for Space and Underwater Neurology, 2002.

A Introduction:

The Research Group on Space and Underwater Neurology has two divisions, Space and Underwater and a subdivision on Hyperbaric Oxygenation Therapy (HBOT).

1. Research in Space Neurology takes place in real microgravity and ground based using simulated microgravity research. In real microgravity research is only possible in cooperation with organisations like NASA, the Russian space organisation (IBMP) and ESA. Contacts with China space program are proposed. At the International Space Station (ISS) neurological programs in real microgravity are restricted, especially since the Columbia accident. On the other hand the preparation for Mars program asks for intensive basic Research in Space Neurology.

A greater part of the research in microgravity can be organised in ground based laboratories using the techniques of simulated microgravity. Ground-based laboratories are using the Dry Water Immersion method (DWI) and the Head Down Tilt method (HDT). Only few ground-based laboratories are available worldwide IBMP laboratory, Moscow, the INS-laboratory, Innsbruck – Austria ground based space laboratory in Messina-Italy and in Nagoyak-Japan. At least there are no reports about based laboratory of the NASA. The IBMP laboratory was reconstructed by Prof. I. B. Kozlovskaya and is now the most modern institute in this field. The ISN-Innsbruck has the privilege of an intensive co-operation with the IBMP-laboratory.

2. Underwater neurology and its scientific activities have to be divided in professional diving (oilfields diving, navy diving etc.), in scuba diving (sport and medical use), sport diving without oxygen supply and in snorkelling.

2.1. Industrial diving centres are mostly organised by the oil industry without research interest. Navy diving centres are under national control. Till now there is no fruitful contact with Navy institutes.

2.2. Scuba diving in the last few years starts as a great possibility to be a coming method in Neurorehabilitation for patients with spinal cord lesions, vertebral spine disturbances, slight hemiparesis and last not least for patients in beginning Parkinson's disease. Few centres are in development as special neurorehabilitation.

2.3. In sport diving without oxygen support and in snorkel diving there are no scientific activities nowadays.

In the division of Underwater Neurology by some of the announced reasons there were only few activities in the last years.

3. Hyperbaric Oxygenation Therapy (HBOT) has great possibilities to become a new therapeutic method in Neurology. Two different indications are initiated. HBOT in acute neurological episodes like stroke and traumatic brain injury and for chronic neurological states like cerebral palsy (CP). The influence of oxygenation in hyperbaric form in acute neurological episodes is the support for partly damaged brain cells in chronic states to activate the dendrites. In the subdivision Hyperbaric Oxygenation (HBO) cooperates with centres in U.S.A, Germany and Russia is build up.

A list of hyperbaric centres worldwide is in development.

B. Organisation of the Research Group Space and Underwater Neurology:

1. Space division, Chairman: I. B. Kozlovskaya, Russia, 15 active members.

2. Underwater division, Chairman: J. Aarii, Norway, 3 active members.

3. Subdivision Hyperbaric Oxygenation Chairman : R. Neubauer, U.S.A., 8 active members.

Because of the special situation in space research and problems in underwater division a reorganisation of the Research group of Space and Underwater Neurology is in preparation. The subdivision HBO found increasing interest. The question for an independent Research Group on Diving Neurology is in discussion.

C. Scientific program of the Research Group on Space and Underwater Neurology, 2002/2003

1. Research program in Space Neurology in real and in simulated microgravity in cooperation with different centres.

1.1. Disturbance of coordinated movements in real microgravity, (IBMP-Moscow, ISN-ASM Austria).

1.2. Sole stimulation and activation of the sensori-motor cortex, using functional MRI method (Ludwig Boltzmann Institute for Restorative Neurology, Vienna-Austria, IBMP, Moscow, Institute for Physiology, University Graz-Austria). After a first phase, which was finished December 2002, the second phase is starting.

1.3. Pressure shoe for the treatment of bed rest-syndrome (Coma states, vegetative state/apallic syndrome, severe cardiac failures, geriatric patients etc.) spin off program(1.2.) sole stimulation and sensori-motoric stimulation (Ludwig Boltzmann Institute for Restorative Neurology, Vienna-Austria, Neurological Department, Otto Wagner Krankenhaus, Vienna-Austria, ISN-Innsbruck, Neurorehabilitation Centre, Magdeburg/Germany, Neurology).

1.4. Neurological investigation of cosmonaut syndrome (IBMP Moscow, ESA, DLR).

1.5. Head Down Tilt (HDT) method for early diagnosis in Parkinson's disease and spastic symptoms (Neurological Department, Otto-Wagner Krankenhaus, Vienna-Austria, Neurological University Clinic, Szeged-Hungary, Neurological Space Institute, Messina-Italy).

2. Research program in Underwater Neurology:

2.1. Scuba diving as a method in Neurorehabilitation in spinal cord lesion, vertebral spine decompensation, spasticity, Diving Centre St. Geran, Mauritius, Diving Centre Rovinj -Croatia.

3. Research projects in Hyperbaric Medicine:

3.1. Hyperbaric oxygenation in the treatment of acute neurological episodes, stroke, traumatic brain injury, (Ocean Hyperbaric Neurologic Centre, Lauderdale-by-the Sea/U.S.A., Hyperbaric Centre, University of Vienna-Austria, HBO-Centre, HBO-Centre Antwerp Belgium, HBO-Centre Münster Germany).

3.2. Hyperbaric oxygenation in Neurorehabilitation of cerebral palsy in children (Ocean Hyperbaric Neurologic Centre, Lauderdale-by-the Sea/U.S.A.)

D. Clinical trials showing effectiveness:

1. Stimulation of the sole and activation in the sensori- motor area, thalamus, frontal lobe, homo-and contralaterally examined with functional MRI method. A second phase, co-operation program with IBMP Moscow, ISN -Innsbruck).

2. Study program for the influence of microgravity on the motor system and on the posterior tract in DWI and HDT in healthy volunteers, co-operation program with IBMP, Moscow, Ludwig Boltzmann Institute for Restorative Neurology, Vienna, Austria.

3. Clinical trial in patients with long-lasting immobility foot sole stimulation (coma stages etc.), open trial development of bed rest syndrome (neurological monitoring, EEG, evoked potential).

4. Early diagnoses of spasticity and Parkinson's disease using HDT method (neurological Department Vienna).

5. Microgravity and its influence on co-ordinated movements in real and simulated microgravity (IBMP Moscow, ISN Innsbruck).

6. Developing of new methods in the training of cosmonauts/astronauts for coordinated movements (IBMP, Moscow, ISN-Innsbruck-Austria).

7. Muscles constitution and muscles enzyme in healthy volunteers with HDT method continuation of a previous project (ISN Innsbruck, Biochemical Institute Innsbruck-Austria, Biochemical Institute Bratislava -Slovakian Republic).

8. Scuba diving method for the therapy of Parkinson's patients in initial state clinical trial, Diving Centre Ronvinij-Croatia.

9. Scuba diving method for spasticity in spinal cord lesions for the therapy in initial state clinical trial, Diving Centre Ronvinij-Croatia.

10. Clinical trial using the HBO therapy in acute stroke co-operation Hyberbaric Oxygenation Intensive Care Clinic, Medical University, Vienna-Austria, HBO-Centre University Hospital, Antwerp-Belgium.

11. HBO method in acute state of moderate traumatic brain injury, co-operation HBO centre department of Intensive Care, Medical University, Vienna, Austria, HBO-Centre University Hospital, Antwerp-Belgium.

E. Organization and Contribution of symposiulms and meetings 2002:

35th Danube Symposium, Beograd, September 2003, HBOT symposium.

7th EFNS Congress, Helsinki, September 2003, HBOT-contribution.

8th EFNS Congress, Paris August 2004, HBOT symposium.

Space Neurology Joint Meeting (German, Austrian and Russian Space Society), Berlin March 27 till 29, 2003.

F. Future program:

Second circular is in preparation asking the members of the Research group and national institutes, as well as to the national Neurological societies, for running interests and proposals for additional members willing to have an active role in the Research Group.

V. Address of the Research Group Space and Under Water Neurology:

c/o Ludwig Boltzmann Institute for Restorative Neurology and Neuromodulation
Otto Wagner-Krankenhaus
Neurologisches Zentrum
Baumgartnerhöhe1
A 1130 Vienna, Austria

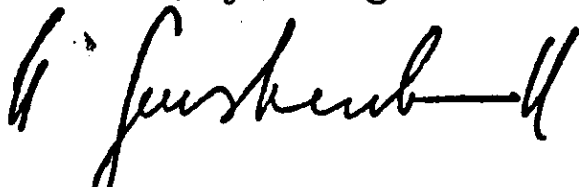
Postal adress:

Rummelhardtgasse 6/3, A-1090 Vienna, Austria

Tel: +431 405 52 03

Fax: +431 409 68 43

E-Mail: f.gerstenbrand@aon.at



Prof. Dr. Dr. h.c. Franz Gerstenbrand
Chairman



Dr. Walter Struhal
Secretary