EFNR The European Federation of NeuroRehabilitation Societies

WFNR World Federation for Neurorehabilitation

FOUNDATION OF THE SOCIETY FOR THE STUDY OF NEUROPROTECTION AND NEUROPLASTICITY

RoNEURO "RoNeuro" Institute for Neurological Research and Diagnostic

FUNDATIA JURNALULUI Journal of Medicine and Life

AMN ACADEMY FOR MULTIDISCIPLINARY NEUROTRAUMATOLOGY

8TH EUROPEAN CONGRESS OF NEUROREHABILITATION

IN CONJUNCTION WITH

20TH CONGRESS OF THE SOCIETY FOR THE STUDY OF NEUROPROTECTION AND NEUROPLASTICITY

27-28 OCTOBER 2025

TORREMOLINOS, COSTA DEL SOL, SPAIN

HYBRID EVENT

EFNR CORE PRESIDIUM

DAFIN F. MUREȘANU
ROMANIA
President

VOLKER HÖMBERG
GERMANY
Vice President

DANA BOERING
GERMANY
Secretary General

CATERINA PISTARINI
ITALY
Research and Education Affairs; Treasurer

KARIN DISERENS
SWITZERLAND
Health Economics

FACULTY

IN ALPHABETICAL ORDER

Emre Adiguzel / Turkey
Margo Annemans / Belgium
Jose M. Azorin / Spain
Heinrich Binder / Austria
Dana Boering / Germany
Natan Bornstein / Israel
Jean Marc Burgunder / Switzerland
Joan Ferri Campos / Spain
Karin Diserens / Switzerland
Stephanie Duchac / Germany
Hakan Ekmekci / Turkey
Marie Elf / Sweden
Pamela Enderby / UK
Belgin Erhan / Turkey
Antonio Federico / Italy
Wayne Feng / USA
Paulo Gargiulo / Iceland
Walter Greenleaf / USA
Sonia Crottaz-Herbette / Switzerland
Max Hilz / Germany
Volker Hömberg / Germany
Ljubica Konstantinovic / Serbia
Gert Kwakkel / The Netherlands
Peter Lackner / Austria
Pavel Leahu/ Moldova
Andreas Luft / Switzerland
Paola Marangolo / Italy
Errikos Maslias / Switzerland
Sindi Mitrovic / Serbia
Elena Moro / France
Kristina Muller / Germany
Dafin F. Mureșanu / Romania
Mayowa Owolabi / Nigeria
Caterina Pistarini / Italy
Thomas Platz / Germany
Ales Praznikar / Slovenia
Katrin Rauen / Germany
Melvyn Roerdink / The Netherlands
Giorgio Sandrini / Italy
Luca Sebastianelli / Italy
Emma Segura / Spain
Nicole von Steinbuchel / Germany
Stefan Strilciuc / Romania
Sigrid Schwartz / Austria
Michael Thaut / Canada
Serban Turliuc / Romania
Johannes Vester / Germany
Paul Verschure / Spain
Pieter Vos / The Netherlands
Sabahat Wasti / UAE
Steven Zeiler / USA

SCIENTIFIC PROGRAM

DAY 1 – 27 OCTOBER 2025

08:30 – 08:45 ***REGISTRATION***

08:45 – 09:00 ***WELCOME ADDRESS***

PRESIDENTIAL SESSION | Chairpersons: Volker Homberg, Dafin Muresanu

09:00 – 09:20 Dafin Muresanu (Romania)
Operationalizing Brain Reserve

09:20 – 09:40 Volker Homberg (Germany)
Quo vadis neurorehabilitation

09:40 – 10:00 Natan Bornstein (Israel)
Updates on post-stroke cognitive impairment

10:00 – 10:20 Elena Moro (France)
Overview on EAN-EFNR Joint Activities

HALL 1		***HALL 2***	
SESSION 2 | CHAIRPERSON: Michael Thaut (Canada)		***SESSION 3 | CHAIRPERSON:*** Johannes Vester (Germany)	
10:20 – 10:40	Max Hilz (Germany) Autonomic nervous system evaluation without specialized equipment or detailed training in the field	10:20 – 10:40	Thomas Platz (Germany) Continuum of care – is stroke rehabilitation post discharge effective?
10:40 – 11:00	Melvyn Roerdink (the Netherlands) Augmented reality (AR) neurorehabilitation: looking beyond the state of the ARt	10:40 – 11:00	Johannes Vester (Germany) Neurorehabilitation Research – Biometric Challenges & Advances

HALL 1		HALL 2	
11:00 – 11:20	Michael Thaut (Canada) Neurological Music Therapy: Where are we	11:00 – 11:20	Stefan Strilciuc (Romania) Neurorehabilitation across the translational sciences spectrum
11:20 -11:40	*COFFEE BREAK*		
11:40 – 12:10	Walter Greenleaf (USA) ***KEYNOTE LECTURE | VR APPLICATIONS***		
12:10 – 12:40	Dafin Muresanu (Romania) ***KEYNOTE LECTURE | COMBINED SPEECH THERAPY AND PHARMACOLOGICAL INTERVENTION TO ENHANCE NEURORECOVERY IN POST-STROKE APHASIA - RESULTS FROM THE ESCAS TRIAL***		

SESSION 4 | CHAIRPERSON: Emre Adiguzel (Turkey)		*SESSION 5 | CHAIRPERSON:* Mayowa Owolabi (Nigeria)	
12:40 – 13:00	Pamela Enderby (UK) What Technology Has To Offer to Improve Rehabilitation of Aphasia	12:40 – 13:00	Gert Kwakkel (The Netherlands) Intensity of practice: When does it matter?
13:00 – 13:20	Serban Turliuc (Romania) Mitigating Incipient Cognitive Decline: Positioning N-PEP-12 Within Preventive Care	13:00 – 13:20	Ales Praznikar (Slovenia) Phenol: an old drug for spasticity treatment still useful?|
13:20 -13:40	Emre Adiguzel (Turkey) Revitalizing Life with Neurotechnologies: The Concept of Ability Laboratory in Rehabilitation	13:20 -13:40	Mayowa Owolabi (Nigeria) Advances of the Lancet Neurology Initiative

HALL 1		HALL 2	
13:40 – 15:00	***LUNCH BREAK***		
SESSION 6 | AVANT CHAIRPERSONS: Peter Lackner (Austria), Stephanie Duchac (Germany)		***SESSION 7 | CHAIRPERSONS:*** Karin Diserens (Switzerland), Hakan Ekhmeci (Turkey)	
15:00 – 15:20	Peter Lackner (Austria) Efficacy of an AI-Based Digital Neurorehabilitation Program	15:00 – 15:20	Belgin Erhan (Turkey) Linking Focal Spasticity Treatment with Functional Recovery after Spinal Cord Injury: Integrating Botulinum Toxin into Neurorehabilitation
15:20 – 15:40	Sigrid Schwartz (Austria) Neurophysiological and neuropathological basics of cognitive rehabilitation	15:20 – 15:40	Hakan Ekhmeci (Turkey) Movement Disorders and TBI
15:40 – 16:00	Paola Marangolo (Italy) Advances in the treatment of Post-Stroke Aphasia	15:40 – 16:00	Errikos Maslias (Switzerland) Behavioral Phenotype of Disorders of Consciousness: Posterior Fossa Syndrome in Adults?
16:00 – 16:20	Stephanie Duchac (Germany) Clinical signs of dysphagia	16:00 – 16:20	Karin Diserens (Switzerland) Behavioral phenotyping in DOC – part 1
16:20 – 16:40	***COFFEE BREAK***		

HALL 1		HALL 2	
SESSION 8 | CHAIRPERSON: Kristina Muller (Germany)		***SESSION 9 | ANHEDONIA AND MOTIVATIONAL DEFICITS AFTER ACUTE BRAIN LESION*** ***CHAIRPERSON:*** Dana Boering (Germany)	
16:40 – 17:00	Kristina Muller (Germany) Functional neurological disorders in children and adolescents	16:40 – 17:00	Dana Boering (Germany) Overview on Motivation
17:00 – 17:20	Nicole von Steinbuchel (Germany) Quality of life in patients after traumatic brain injury across the life span	17:00 – 17:20	Emma Segura (Spain) Anhedonia after Stroke: prevalence and associated factors in the subacute and chronic rehabilitation phases
17:20 – 17:40	Sonia Crottaz-Herbette (Switzerland) Optimizing cognitive rehabilitation with immersive virtual reality	17:20 – 17:40	Andreas Luft (Switzerland) Reward circuitry, Dopa and rehab outcome
17:40 – 18:00	Katrin Rauen (Germany) Early differential diagnosis of cognitive dysfunction after TBI		

18:00-18.30 Wayne Feng (USA)

KEYNOTE LECTURE

STATE OF THE ART IN NON-INVASIVE BRAIN STIMULATION

DAY 2 – 28 OCTOBER 2025

09:00 – 11:00 ***ROUND TABLE | STATE OF AFFAIRS IN NEUROREHABILITATION***|
Moderators: Dafin Muresanu (Romania) and
Volker Homberg (Germany)

Dafin Muresanu | EFNR State of affairs
Serbia – Ljubica Konstantinovic / Sindi Mitrovic
Italy – Caterina Pistarini
Spain – Joan Ferri Campos
Germany – Thomas Platz
Turkey - Emre Adiguzel
Austria – Peter Lackner
The Netherlands - Gert Kwakkel
Moldova – Pavel Leahu
Scotland/Slovenia – Ales Praznikar
Switzerland – Sonia Crottaz-Herbette

11:00 – 11:20 ***COFFEE BREAK***

HALL 1		***HALL 2***	
SESSION 10 | NEUROETHICS AND NEUROPHILOSOPHY | WHAT IS THE IMPACT ON NEUROREHABILITATION? ***CHAIRPERSONS:*** Heinrich Binder (Germany), Giorgio Sandrini (Italy)		***SESSION 11 | RARE NEUROLOGICAL DISEASES*** ***CHAIRPERSON:*** Antonio Federico (Italy)	
11:20 – 11:40	Sabahat Wasti (UAE) Ethics and inclusion: the impact on patients with disability	11:20 – 11:40	Antonio Federico (Italy) Diseases mimicking a Multiple Sclerosis-like phenotype
11:40 – 12:00	Heinrich Binder (Austria) Social perception and stigma: the role of hidden disability	11:40 – 12:00	Jean Marc Burgunder (Switzerland) Rehabilitation in Huntington's disease
12:00 – 12:20	Giorgio Sandrini (Italy) Neuroethics and the role of empathy	12:00 – 12:20	Max Hilz (Germany) Fabry Disease -a rare and often fatal but well treatable with early 1.0 mg/kg Enzyme Replacement Therapy

HALL 1	HALL 2

SESSION 12 | EFNR-WFNR JOINT SESSION

Chairpersons: Dafin Muresanu (Romania), Volker Homberg (Germany)

12:20 – 12:40 Sabahat Wasti (UAE)
Minimal requirements in neurorehabilitation

12:40 – 13:00 Karin Diserens (Switzerland)
Behavioral phenotyping in DOC

13:00 – 13:20 Caterina Pistarini (Italy)
Mental Imagery for planning actions in stroke patients

13:20 – 14:30 ***LUNCH BREAK***

***SESSION 13	EFNR – AMN JOINT SESSION	CHAIRPERSONS:*** Johannes Vester (Germany), Dafin Muresanu (Romania)	***SESSION 14	ORAL PRESENTATIONS***
14:30 – 14:50	Pieter Vos (The Netherlands) Standardization in Mild Traumatic Brain Injury		
14:50 – 15:10	Luca Sebastianelli (Italy) Long-Term Effects of TBI: From Symptoms to Public Health Burden		
15:10 – 15:30	Johannes Vester (Germany) The global burden of TBI with special emphasis on the APC region		

HALL 1		HALL 2	
SESSION 15 | EFNR – NEUROTECHEU JOINT SESSION | CHAIRPERSONS: Dafin Muresanu (Romania), Stefan Strilciuc (Romania)		***SESSION 16 | BUILT ENVIRONMENTS IN NEUROREHAB AND THE NEED OF ENVIRONMENTAL ENRICHMENT | CHAIRPERSON:*** Margo Annemans (Belgium)	
15:30 – 15:50	Jose Azorin (Spain) AI-powered brain-machine interfaces for neurorehabilitation with exoskeletons	15:30 – 15:50 	Marie Elf (Sweden) The Role of Environment in Stroke Rehabilitation
15:50 – 16:10	Paul Verschure (Spain) Goal-oriented neurorehabilitatio	15:50 – 16:10	Margo Annemans (Belgium) Mobilising Patients: Built Environment and Physical Activity in Rehabilitation
16:10 -16:30 	Paulo Gargiulo (Iceland) Novel paradigm to assess postural control response using high density EEG, virtual reality and moving platform	16:10 -16:30 	Steven Zeiler (USA) Enriched environments and recovery
16:30 – 17:00	***COFFEE BREAK***		
17:00 – 17:30	Volker Homberg (Germany) ***KEYNOTE LECTURE AI IN NEUROREHABILITATION – BLESSING OR CURSE***		
17:30-18.00	Dafin Muresanu (Romania) ***KEYNOTE LECTURE ADVANCES IN BRAIN RECOVERY AFTER STROKE***		
	CLOSING AND FAREWELL		

ORGANIZER:

GTM

SCIENTIFIC COORDINATORS:

FOUNDATION OF THE SOCIETY FOR THE STUDY OF NEUROPROTECTION AND NEUROPLASTICITY

MINISTERUL SĂNĂTĂȚII

The European Federation of NeuroRehabilitation Societies

SNR

UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE CAROL DAVILA BUCUREȘTI

UMF UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE IULIU HAȚIEGANU CLUJ-NAPOCA

UNIVERSITATEA DE MEDICINĂ, FARMACIE, ȘTIINȚE ȘI TEHNOLOGIE „GEORGE EMIL PALADE" DIN TÂRGU MUREȘ

THE **NATIONAL NEUROLOGY FORUM**

FOURTH EDITION

PATIENTS, DOCTORS, AUTHORITIES, INDUSTRY -
TOGETHER FOR THE FUTURE OF NEUROLOGY

23-24 APRIL 2026

PALACE OF THE PATRIARCHATE, BUCHAREST, ROMANIA

FORUM.SSNN.RO

ABSTRACTS

REVITALIZING LIFE WITH NEUROTECHNOLOGIES: THE CONCEPT OF ABILITY LABORATORY IN REHABILITATION

EMRE ADIGUZEL
Chief Physician of Ankara Bilkent City Hospital Physical Medicine and Rehabilitation Hospital, Ankara, Turkey

The integration of neurotechnologies into rehabilitation medicine has opened new horizons for objectively assessing, monitoring, and enhancing human performance. The concept of the Ability Laboratory represents a specialized clinical and research ecosystem where advanced motion analysis, robotic systems, virtual reality, and artificial intelligence are combined to optimize functional recovery. Within this environment, patients' physical capacities—such as strength, flexibility, balance, endurance, coordination, and gait—are measured through high-precision biomechanical systems. Data-driven analysis enables the design of individualized rehabilitation programs that evolve dynamically according to functional progress.

At Ankara Bilkent City Hospital, the Ability Laboratory serves as a pioneering model integrating robotic rehabilitation systems for both upper and lower limbs, isokinetic and isometric strength measurement platforms, virtual reality–based neurorehabilitation, anti-gravity treadmill exercises, and dynamic postural assessment technologies. These systems generate objective performance data, allowing clinicians to monitor therapy outcomes, document recovery trajectories, and refine rehabilitation strategies.

The application of artificial intelligence, machine learning, and brain–computer interfaces further enhances the precision, adaptability, and predictive capacity of rehabilitation planning. This comprehensive model bridges clinical practice with translational research, fostering innovation and establishing a framework for evidence-based, personalized rehabilitation. Ultimately, the Ability Laboratory aims to transform rehabilitation from a standardized process into a data-guided, patient-centered, and technology-integrated discipline.

Keywords: neurotechnology, rehabilitation, robotic therapy, motion analysis, artificial intelligence, translational research

MOBILISING PATIENTS: BUILT ENVIRONMENT AND PHYSICAL ACTIVITY IN REHABILITATION

MARGO ANNEMANS
Assistant professor in the programme of Interior Architecture at the Faculty of Design Sciences, University of Antwerp, Belgium

In the context of rehabilitation, research reveals a strong interconnection between patients' physical activity, care culture, and the built environment. As these three elements significantly influence the rehabilitation process, this presentation investigates the factors that affect physical activity within a rehabilitation centre. Special attention is given to the relationship between physical activity and various safety concerns, the role of the built environment in addressing these issues, and how this connects to the prevailing care culture.

The presented studies combine insights from existing literature with a qualitative approach supported by quantitative data. They employ semi-structured interviews, accompanied walks, and patient activity tracking, alongside focus-group interviews with nurses and therapists, to gather complementary perspectives. The research focuses on patients with Multiple Sclerosis, neurological conditions, and locomotor impairments.

Findings indicate that patients tend to interpret physical activity narrowly, often equating it solely with formal therapy sessions. However, data from activity trackers reveal that everyday activities can be just as physically demanding as therapy, a view supported by nurses and therapists. When examining the built environment in relation to safety during physical activity, key themes emerge: accessibility and physical barriers, visual connections and (in)dependence, and spatial familiarity.
On a broader level, motivation is found in setting clear goals, fostering social interaction, and enabling choice and control to cultivate a sense of normality—all of which are influenced by the built environment.

The way patients behave in and interact with their surroundings is closely tied to how staff communicate and deliver care. Raising awareness among care and design professionals about the interplay between physical activity, care culture, and the built environment can help them address safety concerns more thoughtfully and communicate about them in a nuanced manner. Such awareness also contributes to a care culture that fully supports patients in being physically active, respecting their individuality and capabilities. This requires differentiation—not only in how patients are approached (whether patient-centred or person-centred), but also in how they are spatially supported.

In conclusion, focusing on the factors that define, hinder, or promote physical activity in rehabilitation not only highlights its benefits and limitations, but also deepens our understanding of how care culture and the built environment are interrelated.

AI-POWERED BRAIN-MACHINE INTERFACES FOR NEUROREHABILITATION WITH EXOSKELETONS

JOSE AZORIN

Director of the Brain-Machine Interface Systems Lab, Full Professor of the Systems Engineering and Automation Department and Deputy Vice Rector of Research at Miguel Hernández University of Elche, Spain

Brain–machine interfaces (BMIs) have recently emerged as promising rehabilitation tools for promoting recovery of lost motor function. By enabling direct communication between the brain and an external device such as a robotic exoskeleton, BMIs offer a novel approach to rehabilitation. Subjects are required to engage in specific mental practices that translate into concrete actions in the output device. One such practice is motor imagery (MI), which involves the imagination of a given movement without actually executing it. When used to generate a movement-associated stimulus that is provided by the robotic exoskeleton, MI offers an effective strategy for facilitating motor recovery through enhancing the principles of neural plasticity. This talk will present several examples of BMIs that have been developed at Universidad Miguel Hernandez de Elche (Spain) to command lower-limb exoskeletons, including one based on a synchronous protocol and antoher based on asynchronous protocol. In the synchronous BMI, the researcher informs the subject when to perform each mental task and when to expect specific actions in the exoskeleton conditioning the subject. In contrast, the asynchronous BMI is more natural as the subject decides when to perform each mental task without time constraints and any external cue. In addition, it will be explained the differences obtained in the performance of the BMI depending on the AI-techniques used in their implementation.

SOCIAL PERCEPTION AND STIGMA: ETHICAL PERSPECTIVES ON HIDDEN DISABILITY IN NEUROREHABILITATION

HEINRICH BINDER
Emeritus Head of the Neurological Centre at the Otto Wagner Hospital in Vienna, Austria

Hidden disabilities—such as cognitive fatigue, executive dysfunction, or subtle affective changes after neurological disease—often escape social recognition and are easily misinterpreted. This lecture explores how stigma emerges not as an inherent attribute but as a relational and perceptual event shaped by cultural norms and expectations. Drawing on Erving Goffman's sociology, phenomenological insights from Husserl, and ethical theories by Honneth and Nussbaum, the presentation examines how the "unusual" becomes morally and socially marked. Particular emphasis is given to the concept of epistemic injustice (Havi Carel), which highlights how lived experiences of illness are misunderstood when symptoms remain invisible. From an anthropological perspective (Plessner, Gehlen, Canguilhem), disability is interpreted as a mirror of societal demands for perfection.

For neurorehabilitation, this implies an ethical obligation to recognize hidden disabilities, educate communities, and foster environments that integrate rather than conceal human vulnerability. The talk argues that social perception, recognition, and empathy are central to a culture of dignity and inclusion

ADRESSING MOTIVATION TO FOSTER RECOVERY AFTER ACUTE BRAIN LESION- AN OVERVIEW

DANA BOERING
Secretary General of the European Federation of NeuroRehabilitation Societies (EFNR)
Germany

Current literature increasingly considers motivation as a long time eluded, yet very important aspect of rehabilitation and there is a growing body of literature emphasizing neurobiological, psychological, and clinical issues of patient motivation during neurorehabilitation after stroke. Nevertheless there is only a scarce interconnection and transfer between the various fields: neurobiology of motivation, psychology of motivation, the role of behavioral or pharmacological manipulation on motivation, disentangling motivation from other volitional and emotional disturbances after acute brain injury

The talk will intent to build a framework for a comprehensive transdisciplinary motivation enhancing approach in neurorehabilitation and give a conceptual draft stressing motivation assessment and motivation increasing tools in day by day clinical practice.

POST STROKE COGNITIVE DECLINE

NATAN BORNSTEIN
Director of the Brain Division at Shaare-Zedek Medical Center; Chairman of the Israeli Stroke Society (ISS), Tel-Aviv, Israel

After stroke patients frequently experience a spectrum of neuropsychological and motor deficits resulting in impaired activities; cognitive and functional. About 20%-25% of patients after stroke will develop cognitive impairment/dementia in the months following the event.

It is still not clear who are those patients that are prone to post-stroke cognitive decline. Who are the vulnerable patients?

The aim of the Tel-Aviv Brain Acute Stroke Cohort (TABASCO) is to characterize inflammatory, stress and neuroimaging biomarkers that may predict and detect the vulnerable subjects and might outline new concepts of early interventions and novel treatment strategies for those at higher risk. The TABASCO study and its findings will be discussed.

Currently the pharmacological treatment of Post-Stroke cognitive impairment includes AchE-Is with only modest benefit.

Another used treatment is CITICOLINE (cytidine 5 diphosphocholine - (CDP-Choline)). A meta-analysis of all the studies that was conducted in 2016 concluded that although citicoline appears to be safe and maybe beneficial, large clinical trials are needed to confirm its benefits.

Cerebrolysis, a multimodal drug, that mimics neurotrophic factors and maintains, protects and restores neuronal function. A COCHRANE review was conducted on the studies of cerebrolysin 10-30 ml/day in vascular dementia (2013) concluded it is beneficial and safe.

A more recent Meta-analysis on Cerebrolysin and AD was conducted (Gauthier 2015) with phenomenal NNT of 2,9 patients with the conclusion that Cerebrolysin

has an overall beneficial effect and favorable benefits - risk ratio in patients with mild-to-moderate AD.

To conclude, the combination of behavioral and safe and effective pharmacological adjuvant therapies will significantly improve and promote brain recovery after stroke including cognitive impairment.

REHABILITATION IN HUNTINGTON'S DISEASE

JEAN-MARC BURGUNDER
Switzerland

Neurological rehabilitation plays a crucial role in managing progressive neurological diseases, and Huntington's disease will be taken as an example in this presentation. Non-pharmacological therapies such as physiotherapy, speech and swallowing therapy, and occupational therapy are essential in maintaining function, independence, and quality of life. These therapies must be tailored to the stage of the disease adapting to the evolving needs of the patient.
In individuals genetically predisposed to Huntington's disease, the presymptomatic stage offers a unique window for strategies to increase physical and cognitive reserve. Rehabilitation has a focus on education, baseline assessments, and the promotion of physical and cognitive resilience. Physiotherapy emphasizes general fitness, posture, and balance training to build reserve. Occupational therapy (OT) supports lifestyle modifications to minimize future risks, and speech-language therapy may assess baseline communication and swallowing function for future comparison.

As initial symptoms emerge rehabilitation aims to preserve function and independence as long as possible. Physiotherapy becomes more targeted, addressing specific motor deficits, promoting flexibility and agility in order to build up compensatory mechanisms. OT works to support activities of daily living (ADLs), incorporating adaptive techniques and tools to maintain independence in work, self-care, and mobility.

With disease progression, patients typically experience worsening motor impairments, speech difficulties, and cognitive or behavioral changes. Rehabilitation becomes more compensatory than restorative. Physiotherapy emphasizes safe mobility, use of assistive devices, and caregiver training. In speech therapy, augmentative and alternative communication (AAC) strategies, such

as communication boards or electronic devices, may be introduced. Swallowing therapy becomes critical to prevent aspiration, including texture-modified diets and safe swallowing techniques. OT focuses on environmental modifications, energy conservation, and training caregivers in assisting with ADLs.
In the final stage, the focus of rehabilitation shifts toward comfort, dignity, and palliative care. Mobility is often severely limited, requiring full assistance. Physiotherapy aims to prevent pressure sores, maintain joint mobility, and support respiratory function through positioning. Speech and swallowing therapy centers on maintaining comfort and safety during feeding, often collaborating closely with dietitians and palliative teams. Communication may be limited to non-verbal means, supported by AAC. Occupational therapy ensures the environment supports ease of care and fosters meaningful engagement where possible.
Non-pharmacological therapies are essential components in the care of patients affected my Huntington's disease tailored to each stage of disease progression. From proactive approaches in the presymptomatic phase to comfort-focused care in the end stage, physiotherapy, speech-swallowing therapy, and occupational therapy work collaboratively to support both patients and caregivers through the journey of neurological illness.

BEHAVIORAL PHENOTYPING IN DISORDERS OF CONSCIOUSNESS : HOW TO AVOID CONFOUNDERS AND GAPS OF THE CLINICAL AND MULTIMODAL ASSESSMENT

KARIN DISERENS
Department of Clinical Neurosciences, Lausanne University Hospital, Switzerland

Behavioral phenotyping in Disorders of Consciousness (DoC) remains complex. Recent results from international working groups and teaching courses and experience of a Swiss pilot unit of acute neurorehabilitation integrating epistemological concepts, along with findings from gap analyses and multimodal studies aimed at improving diagnosis, prognostication, and methodology. The results are presented to foster a better understanding of the underlying mechanisms of recovery.

The main focus is to identify and mitigate gaps of knowledge and factors that confound accurate clinical assessment of patients presenting with a behavioral phenotype of DoC. Improving the reliability of clinical assessment will strengthen the development of multimodal assessments, encompassing structural and functional neuroimaging as well as neurophysiological techniques, which can corroborate and refine clinical approaches. These advances will have a significant impact on

the understanding and optimization of acute neurorehabilitation strategies.

Part I
Recommendations and practical strategies to mitigate confounders and gaps in clinical assessment

Part II
Presentation of recent findings from multimodal assessments (structural and functional MRI, PET, and neurophysiology — including command-independent evoked potentials related to Peri-Personal Space [PPS]) to validate the improved clinical assessment of behavioral phenotyping in Disorders of Consciousness (DoC), and to deepen the understanding of the impact of acute neurorehabilitation on the neurophysiological mechanisms underlying recovery
Recommendations and practical strategies to mitigate confounders and gaps in clinical assessment

Part II
Presentation of recent results of multimodal assessment (structural and functional RMI, PET and Neurophysiology (command independent evoked potentials (PPS: Peri Personal Space) to confirm the results of improved clinical assessment of behavioral phenotyping in DoC and understanding of the impact of acute neurorehabilitation on the neurophysiological mechanism of recovery.

AN INCLUSIVE COMMUNITY-BASED CONCEPT OF LONG-TERM CARE WITH PEOPLE WITH NEUROLOGICAL LESIONS: DISCUSSION OF THE RESULTS OF THIS SWISS MUNICIPAL PILOT PROJECT OF INCLUSION: REALITY OR DREAM?

KARIN DISERENS
Department of Clinical Neurosciences, Lausanne University Hospital, Switzerland

Neurological diseases are the leading cause of disability worldwide. The care pathway for people with acquired brain injuries differs from one European country to another, as it depends on a patient's prognosis and the organisation and resources of the national healthcare system in question. After discharge from intensive neurorehabilitation care, facilities are lacking internationally for young patients who do not require full-care institutions but need assistance with daily living activities due to residual cognitive impairment and/or reduced mobility, in the sense of appropriate facilities for both social and professional integration.

The aim of the Swiss Pilot project is to evaluate the integration of this type of patient into the community in an inclusive village concept and the results of this pilot project will be presented and discussed in a round table.

The objective of the round table will be to examine the evaluation instruments that determine the efficiency and outcome of the inclusive concept to estimate whether the implementation of this concept is realistic at the European level.

Proposition: Round Table: chairs : Prof D Muresanu, Prof V Hömberg & Prof K Diserens, Prof M Leonardi

CLINICAL SIGNS OF DYSPHAGIA: BEDSIDE INDICATORS AND THEIR NEUROREHABILITATIVE RELEVANCE

STEFANIE DUCHAC
SRH University, Germany

BACKGROUND:
Dysphagia is a frequent and potentially life-threatening consequence of neurological disorders such as stroke, traumatic brain injury, Parkinson's disease, or amyotrophic lateral sclerosis. Timely recognition of clinical signs is essential to prevent aspiration pneumonia, malnutrition, dehydration, and reduced quality of life. While instrumental assessments such as videofluoroscopy and fiberoptic endoscopic evaluation of swallowing (FEES) remain the gold standards, clinical bedside evaluation continues to play a pivotal role in early detection and in guiding therapeutic decision-making in neurorehabilitation settings.

OBJECTIVE:
This presentation aims to provide an integrative overview of the most relevant clinical signs of oropharyngeal dysphagia and their diagnostic and therapeutic implications in neurorehabilitation practice. It will highlight how bedside findings contribute to clinical reasoning, risk estimation, and the interdisciplinary management of swallowing disorders.

METHODS:
A synthesis of current evidence and clinical experience forms the basis of this overview. The presentation will focus on characteristic observable signs during swallowing assessment and daily patient interaction, emphasizing their pathophysiological meaning and diagnostic value. The interrelation between these

signs and the underlying neurological impairments will be discussed, along with considerations for when further instrumental evaluation is indicated.

RESULTS:
Clinical indicators of dysphagia encompass a broad spectrum of motor, sensory, and behavioral signs. Although individual signs may lack diagnostic precision, the combination of multiple clinical indicators enhances the reliability of bedside assessment. Repeated observation over time provides valuable insights into the course of swallowing recovery and the effectiveness of therapeutic interventions.

DISCUSSION:
Accurate recognition and interpretation of clinical signs require interdisciplinary expertise and structured observation. In neurorehabilitation, clinicians must integrate these signs into individualized management strategies, balancing safety, nutrition, and patient participation. Systematic bedside assessment serves as a practical and cost-effective foundation for early intervention, ongoing monitoring, and communication within the rehabilitation team.
CONCLUSION:
Clinical signs of dysphagia remain the cornerstone of early detection and management in neurorehabilitation. A structured, team-based approach enhances diagnostic accuracy, optimizes safety, and promotes functional recovery. Awareness and training in recognizing subtle clinical indicators can substantially improve patient outcomes and reduce dysphagia-related morbidity.

Keywords: Dysphagia, Clinical signs, Neurorehabilitation, Swallowing disorders, Bedside assessment, Aspiration risk.

TRAUMATIC BRAIN INJURY AND MOVEMENT DISORDERS

HAKAN EKMEKCI
Selçuk Unıversıty, Faculty of Medicine, Department of Internal Medical Sciences, Neurology Department, Selçuklu, Turkey

The most common neurodegenerative diseases carry a significant cost and burden on humanity. Alzheimer's disease (AD), Parkinson's disease (PD), and motor neuron disease (ALS), the top three, have received particular attention. The etiology, course, and management of these three major disease groups are unique. The common denominator is traumatic brain injury (TBI).

Of these diseases, PD and other movement disorders, in particular, are the primary focus of this study. A person is always at risk for TBI throughout their lifespan. Concepts such as severity, age of onset, location, and type of TBI create a highly heterogeneous situation within TBI. And we know that TBI is a risk factor for PD. Examining the relationship between TBI and PD, given the wide range of variables, is complex. Roughly speaking, the prevalence of PD, with a slow but progressive course, is approximately 18%, based on past TBI and potential future TBI.

Occupationally higher-risk groups are particularly worthy of investigation. Athletes, military personnel, and heavy-duty workers are also at relative risk. Mild TBI is the most common of all TBIs. Mild TBI (mTBI) accounts for a 56% higher risk of developing PD in US veterans, and the risk increases with injury severity. While evidence suggests a link between TBI and PD, fundamental questions remain, such as whether TBI can trigger or accelerate PD pathology in vulnerable populations.
When examining the potential mechanisms by which TBI may initiate or accelerate PD, mechanisms such as neuroinflammation, metabolic derangement, and protein accumulation are observed. Amyloid precursor protein (APP), alpha-synuclein (α-syn), hyperphosphorylated Tau, and TAR DNA-binding protein 43 (TDP-43) have been associated with TBI. Recent studies have found upregulation of Leucine-Rich Repeat Kinase 2 (LRRK2) in the brains of experimental animals after TBI. A subset of Rab proteins has been identified as biological substrates of the LRRK2 protein, which is commonly associated with late-onset PD. This supports the existence of an overlapping mechanism between TBI and PD. Therefore, the mechanistic overlap between TBI and PD focuses specifically on inflammation, metabolic dysregulation, and the aforementioned proteins.

We must focus on PD and TBI, focusing on other issues as well. TBI can lead to motor, movement, visual (processing) disorders, and vestibular disorders; these are often accompanied by cognitive impairments, making treatment and rehabilitation of these patients challenging. Unfortunately, the evidence regarding the medical treatment and rehabilitation of brain-injured patients with movement disorders (MD) is insufficient and falls short of expectations.

In light of these data, it is beneficial to reemphasize neurorehabilitation in the context of TBI and MD.

THE ROLE OF THE ENVIRONMENT IN NEUROREHABILITATION: INSIGHTS FROM CLINICAL AND HOME CONTEXTS

MARIE ELF
Professor of Nursing at Dalarna University, Sweden

Rehabilitation is influenced not only by therapeutic interventions but also by the environment in which recovery takes place. A growing body of research demonstrates that environmental factors, physical, social, and organizational, play a significant role in shaping patient experiences, participation, and outcomes.

This keynote will draw on a series of studies examining hospital and home settings and give examples of studies using the concept of enriched environments. Findings from these studies illustrate how elements such as stimulation, accessibility, and opportunities for engagement can act as important enablers of rehabilitation. Evidence from clinical environments and more recent work in home-based contexts will be presented, showing how supportive surroundings can strengthen participation, foster autonomy, and improve quality of life.

The presentation will also discuss the implications for healthcare design and practice, including how environments can be purposefully structured to support rehabilitation processes. By viewing the environment not merely as a shelter, but as an integral component of rehabilitation, we can develop strategies that bridge research and practice across different care contexts.

WHAT TECHNOLOGY HAS TO OFFER TO IMPROVE REHABILITATION OF APHASIA

PAMELA ENDERBY
1.Sarah Lambert Research and Outcomes Officer, Royal College of Speech and Language Therapists
2. Kathryn Moyse Outcomes and Informatics Manager, Royal College of Speech and Language Therapists

Technology is moving apace, and it is important that we exploit this potential to the benefit of our clients. This paper will present 2 areas which can be used to improve the rehabilitation of those with aphasia.

Firstly, I will discuss the use of technology in aphasia therapy both to assist the provision of therapy virtually and to increase the intensity and specificity of

treatment by using rehabilitation programmes and apps specially designed for aphasia rehabilitation. Dangers, concerns and pitfalls will be considered along with advantages and benefits.

Secondly, the data collected by the Royal College of Speech and Language Therapists on the national database ROOT (Royal College of Speech and Language Therapists Online Outcome Tool) will provide illustration of the developments in technology to collect and collate real-world evidence to inform the improvement of services and provide the context often missing from research. The database currently holds information on more than 110,000 clients referred to speech and language therapy. More than 4000 of these have a referral related to aphasia following stroke. The patterns of referral and outcomes will be used as an example of the value and importance of such data in benchmarking, driving services forward and improving quality by identifying strengths and weaknesses of current practice.

LINKING FOCAL SPASTICITY TREATMENT WITH FUNCTIONAL RECOVERY AFTER SPINAL CORD INJURY: INTEGRATING BOTULINUM TOXIN INTO NEUROREHABILITATION

BELGIN ERHAN

MD, Specialist PMR, Istanbul Medeniyet University, Faculty of Medicine, PMR Department, Istanbul,Turkey
Chair, ISCoS Prevention Committee

Spasticity is one of the most common complications seen after spinal cord injury (SCI). Spasticity develops gradually over several months after SCI. Spinal shock, loss of tendon reflexes below the level of lesion and flaccid tone are observed in the acute stage of SCI. 53% to 78% of individuals with chronic SCI have symptoms of spasticity, where 27%–40% of SCI individuals consider spasticity to be problematic and associated with significant functional impairments (transfers). Spasticity can have profound impacts on quality of life, including functional limitations, and difficulties with activities of daily living among individuals with different levels and severity of injury. Spasticity is a personal experience that requires a multidimensional approach for evaluation and effective management. The treatment plan should be case specific and taliored. A multimodal and a multidisciplinary team approach are needed for an effective treatment.

Local treatments (chemodenervation or focal neurolysis) are used primarly in the management of spasticity affecting certain muscle groups. More recently Botulinum toxin (BoNT) chemodenervation has gained popularity for the management of

focal spasticity in patients with UMN lesions because of its ease of administration, well tolerability and beneficial effects In SCI, the distribution of spasticity tends to be more diffuse, so that focal treatments may be of less benefit than in other etiologies of spasticity. BoNT injection can be beneficial in the treatment of spasticity secondary to SCI. The recommendation for the use of BoNT for relieving focal spasticity in SCI individual is independent of the etiology of the spasticity, depending rather on the presence of an increase in muscle tone that interferes with function The advantages for its use include the ability to achieve a focal response, a relative ease of administration and avoiding the sedation common with other pharmacological alternatives.

This lecture explores the evolving role of BoNT injections as a precision tool for modulating hypertonia, optimizing biomechanics, and enhancing participation outcomes in SCI rehabilitation. Traditionally, spasticity management has aimed to reduce tone globally, often prioritizing comfort or caregiver ease over functional enhancement. However, with the advent of more refined localization techniques—such as ultrasound and electrical stimulation guidance—and a better understanding of segmental motor control, BoNT is increasingly used to target muscles that impede volitional movement while preserving useful tone. When administered strategically and combined with intensive, goal-oriented rehabilitation, BoNT can facilitate motor relearning, promote neuroplasticity, and improve task-specific performance. Practical considerations will also be discussed, including optimal muscle selection, dose titration, timing relative to rehabilitation phases, and outcome measurement tools such as the Modified Ashworth Scale and Tardieu Scale.

Ultimately, the presentation aims to position BoNT not as an isolated intervention, but as a bridge between spasticity control and functional recovery, encouraging clinicians to adopt a dynamic, evidence-based, and multidisciplinary approach to the management of spasticity after SCI.

RARE NEUROLOGIC DISEASES MIMMICKING A MULTIPLE SCLEROSIS LIKE PHENOTYPE

ANTONIO FEDERICO
Chairman Specialist Group Rare Neurologic Diseases, World Federation of Neurology (WFN)

The use of neuroimaging criteria for diagnosis of Multiple Sclerosis (MS), with the evidence of time and spaces disseminated white matter lesions is important for an early diagnosis and treatment . However several white matter disorders, mainly genetic, need to be considered in the differential diagnosis also with the familial form of MS. Infact, many forms of genetic leukodystrophies and

leukoencephalopathies are characterized by a juvenile or adult onset, progressive or relapsing-remitting courses, intrafamilial clinical heterogeneity and MRI signs of multifocal white matter (WM) abnormalities, clinical findings that may lead to a temporary confusion with MS.

Between these, adrenoleucodystrophy and adrenomyeloneuropathy and Paelizaeus-Merzbacker diseases are the most important conditions with X-linked inheritance; CADASIL, CARASIL and other small vessel diseases , spheroid leucodystrophy and Lamin1 leucodystrophy within the dominant forms, and Leber's hereditary optic atrophy in the mitochondrial inherited forms.

In this presentation we will report several cases , stressing on the risk of misdiagnosing of a genetic leukodystrophy with MS, especially in an early disease stage, with a consequence of an inappropriate and uneffective treatment.

Genetic diseases mimicking multiple sclerosis.
Hsu CL, Iwanowski P, Hsu CH, Kozubski W.Postgrad Med. 2021 Sep;133(7):728-749

Common Clinical and Imaging Conditions Misdiagnosed as Multiple Sclerosis: A Current Approach to the Differential Diagnosis of Multiple Sclerosis.
Siva A.Neurol Clin. 2018 Feb;36(1):69-117.

Diagnostic algorithm for the differentiation of leukodystrophies in early MS.
Köhler W.J Neurol. 2008 Dec;255 Suppl 6:123-6.

Sporadic adult-onset leukoencephalopathy with neuroaxonal spheroids mimicking cerebral MS. Keegan BM, Giannini C, Parisi JE, Lucchinetti CF, Boeve BF, Josephs KA.Neurology. 2008 Mar 25;70(13 Pt 2):1128-33

The differential diagnosis of multiple sclerosis: classification and clinical features of relapsing and progressive neurological syndromes.
Trojano M, Paolicelli D.Neurol Sci. 2001 Nov;22 Suppl 2:S98-102.

Genetic diseases misdiagnosed as multiple sclerosis: Observational study and review of literature
Daniele Mandia, Natalia Shor, Alise K Carlson, Emmanuel Obusez, Jeffrey A Cohen, Silvia Fenu, Ettore Salsano, Roberta La Piana, João Durs , Pedro Faustino, Romain Deschamps, Caroline Bensa, Clement Vialatte de Pemille, Elisabeth Maillart , Caroline Papeix , Gabrielle Macaron , Yann Nadjar. Mult Scler Relat Disord. 2025 Jul:99:106439.

TRANSCRANIAL DIRECT CURRENT STIMULATION: PAST, PRESENT, AND FUTURE

WAYNE FENG

Chief of Division of Stroke & Vascular Neurology, Medical Director of Duke Comprehensive Stroke Center, USA

Transcranial direct current stimulation (tDCS) is a simple, safe, and cost-effective form of noninvasive brain stimulation that can be applied concurrently with rehabilitation therapy—making it an appealing tool for enhancing post-stroke motor recovery. However, clinical results to date have been inconsistent. Dose has emerged as a critical factor: evidence from animal experiments, computational modeling, meta-analyses, and in-vivo human studies all suggest that current human protocols may be underdosing the cortex.

The NIH-funded TRANSPORT2 trial, a multicenter, randomized, dose-selection study, compared sham, low-dose (2 mA), and high-dose (4 mA) tDCS paired with constraint-induced movement therapy (CIMT)—a well-validated rehabilitation intervention with standardized procedures. Despite rigorous design, no significant separation was observed among the three groups on motor impairment (Fugl-Meyer Upper Extremity scale), motor function (Wolf Motor Function Test), or quality of life (Stroke Impact Scale). Notably, this is the first trial in which FM-UE scores were both locally collected and centrally adjudicated, revealing modest but important discrepancies even after assessor certification.

Future work should refine what constitutes a clinically meaningful change (MCID) in FM-UE, further evaluate dosing based on current density, and explore individualized, model-informed tDCS paradigms to overcome current translational limitations.

NOVEL PARADIGM TO ASSESS POSTURAL CONTROL RESPONSE USING HIGH DENSITY EEG, VIRTUAL REALITY AND MOVING PLATFORM

PAOLO GARGIULO
Founder and Director for the Institute for Biomedical and Neural Engineering
Reykjavik University Menntavegi, Reykjavik, Iceland

Postural control is a complex neuromotor function that relies on the integration of sensory, motor, and cognitive systems to maintain balance and stability. Neurodegenerative diseases such as Parkinson's disease, Alzheimer's disease, and multiple sclerosis often disrupt these mechanisms, leading to impaired postural regulation and increased fall risk. The BioVRSea paradigm, which combines immersive virtual reality (VR) environments with biomechanical and physiological measurements on a moving platform, offers a novel framework to assess multisensory integration and balance adaptation in dynamic conditions. By simulating ecologically valid perturbations, BioVRSea enables the quantification of motor responses, muscle activation patterns, and autonomic nervous system modulation under controlled yet realistic scenarios. This multimodal approach provides valuable insights into how neurodegeneration affects the interplay between sensory feedback and motor output, supporting the development of objective biomarkers for early diagnosis, progression monitoring, and rehabilitation strategies in neurodegenerative disorders.

OPTIMIZING COGNITIVE REHABILITATION WITH IMMERSIVE VIRTUAL REALITY

SONIA CROTTAZ-HERBETTE
Lecturer at the Department of Clinical Neurosciences, Centre Hospitalier Universitaire Vaudois in Lausanne, Switzerland

Immersive virtual reality (VR) offers new opportunities to enhance cognitive rehabilitation by combining ecological validity with precise experimental control. This presentation will examine how immersive VR can be strategically integrated into neurorehabilitation to optimize cognitive recovery, with a particular focus on attention and executive functions in patients with acquired brain injury. We will review recent experimental and clinical studies demonstrating how VR can increase training intensity, enhance ecological relevance, and support the generalization of therapeutic gains to everyday activities. Special emphasis will be placed on how VR fosters motivation and engagement, key factors for effective rehabilitation, and

enables the collection of detailed behavioral data such as reaction times, error patterns, and movement dynamics. These data provide real-time feedback and can inform both clinical decision-making and research. We will also discuss adaptive algorithms that modulate task difficulty according to individual progress, thereby supporting personalized rehabilitation trajectories. Despite its promise, several challenges remain, including accessibility, cost, and the need for standardized protocols. Future research should aim to define optimal training parameters, establish clear clinical indications, and assess long-term functional outcomes.

FABRY DISEASE - RARE AND OFTEN FATAL BUT WELL TREATABLE WITH EARLY 1.0 MG/KG ENZYME REPLACEMENT THERAPY

MAX HILZ
University of Erlangen-Nuremberg, Erlangen, Germany
Icahn School of Medicine at Mount Sinai, New York, NY, USA

Fabry disease is a rare, lysosomal storage disorder that afflicts both genders despite its X-linked inheritance. Pathogenic GLA gene mutations cause α-galactosidase A deficiencies and glycosphingolipid accumulation with progressive tissue damage in many organs, including kidneys, heart, brain, peripheral and autonomic nervous system. The disease manifests as classic, early-onset or non-classic, later-onset phenotypes. Organ damage often causes life-threatening complications that reduce life expectancy. Very low or absent α-galactosidase A levels cause signs and symptoms already in early childhood. Children suffer from excruciating neuropathic pain, painful crises, gastrointestinal pain, cramping, and fulness, hypohidrosis and heat-intolerance. Symptoms are largely due to somatic and autonomic small fiber neuropathies that are often overlooked. Without adequate therapy, renal function continuously deteriorates to end-stage kidney failure, myocardial glycosphingolipid storage induces left ventricular hypertrophy, heart failure, conduction abnormalities and arrhythmias. Strokes occur already in young adults.

Only early treatment may stop or slow disease progression. Early biweekly enzyme replacement therapy (ERT) with 1.0 mg/kg Agalsidase beta successfully slows or halts deterioration of cardiac, renal, or cerebral disease progression, reverses small fiber neuropathy in most patients and significantly improves neuropathic pain. Early 1.0 mg/kg ERT reverses the prognostically unfavorable baroreflex dysfunction and thus improves patients' prognosis.

AUTONOMIC NERVOUS SYSTEM EVALUATION WITHOUT SPECIALIZED EQUIPMENT OR DETAILED TRAINING IN THE FIELD

MAX HILZ
University of Erlangen-Nuremberg, Erlangen, Germany
Icahn School of Medicine at Mount Sinai, New York, NY, USA

Dysfunction of the autonomic nervous system (ANS) is common in many diseases. However, many physicians are not familiar with screening tests suited to identify ANS disorders. While advanced autonomic testing requires specialized, expensive equipment and at times somewhat difficult analyses of recorded signals, there is a readily available approach towards screening for ANS dysfunction.

The first approach should involve history taking, performing a solid physical and neurological examination, asking the patient to fill a validated 31-item self-assessment questionnaire, the Composite Autonomic Symptom Score 31 (COMPASS-31). The Compass-31 is available in many languages and assesses autonomic symptoms in six domains, orthostatic intolerance, vasomotor, secretomotor, gastrointestinal, bladder, and pupillomotor function. Further screening for cardiovascular autonomic dysregulation requires a simple blood pressure device, an inexpensive one-channel electrocardiogram monitor, and a stethoscope. The examiner should observe whether heart rate fluctuates under resting conditions or whether resting heart rate does not modulate but is abnormally fixed. The following measurements of heart rate and blood pressure should be performed: non-continuous recording of heart rate and blood pressure every minute for 10 minutes at supine rest and again every minute for 5 to 10 minutes upon active standing up. This so-called Schellong test assesses baroreflex function and may already unveil e.g., Postural Tachycardia Syndrome, neurogenic or non-neurogenic orthostatic hypotension, or supine hypertension. Further tests include metronomic deep breathing at six cycles per minute. The test normally shows increase of heart rate during inspiration and heart rate slowing during breathing out. This largely parasympathetically mediated fluctuation in heart rate is progressively reduced in patients with cardiac autonomic neuropathy. The Valsalva maneuver is a highly valuable test but requires some experience and continuous blood pressure monitoring since changes in blood pressure are the driving force of heart rate changes during and after the expiratory strain. Instead, other tests such as the sustained handgrip test are suited to determine whether diastolic blood pressure rises adequately during the handgrip. Heart rate and blood pressure can be measured discontinuously, once every minute. Another challenge of the sympathetic nervous system is the cold arm or cold leg test. Again, discontinuous measurement of heart rate and blood pressure once every minute is sufficient to

determine whether there is a prominent increase in both signals upon immersion of a patient's arm or leg in ice-cold water. There is also the Cold-Face Test that normally shows a non-baroreflex-mediated but directly vagus-mediated slowing of heart rate while blood pressure increases upon stimulation of the cheeks and forehead (but sparing the ocular region) with ice pads. Adequately performing these procedures will identify many patients with cardiovascular autonomic dysfunction. If results are ambiguous, patients should be further referred to a center that specializes in the evaluation of patients with ANS disorders.

USE OF AI IN NEUROREHABILITATION: BLESSING OR CURSE?

VOLKER HÖMBERG
President of World Federation of Neurorehabilitation

Over the last two years the development of large language AI models LLM) was exteremy rapid up to the point that chatbots have invaded almost all aspects of everyday life and are about to replace the usual information gathering strategies from the internet so that we now may even label them as "classical". AI development started with trivial application as cat picture identification but resulted in suitable techniques for analysis and interpretation of pictorial and grahic date eg. in neuroimaging . Now AI LLM have a huge power in assembling, sorting ,compiling and communicating data with wide fields of application also in the medical world. This opens new and personell saving avenues for differential diagnoses and medical decisions, eases communication with patients and and may also be helpful in guideline development and in designing new drugs and procedures. A possible straightforward application in neurorehabilitation is to use AI as a tool for low threshold unexpensive rollout of knowledge and skills for hundred of milliions of people especially in low-middle income countries who do not have accesss to decent neurorehabilitation. AI may play a pivotal role in helping to solve dramatic mankind problems as decarbonisation, better climate prognoses up to development of nuclear fusion technology.

It is fascinating to see the AI may also develop properties like empathy when dealing with patients up to the point that patients tend to prefer the interaction with chatbots over "real" clinicians as the technical systems never tire out and are constantly nice and cooperative.

Nevertheless a lot of caveats have to be introduced. As usual with technology there are always two sides of the medal: Invasion of fake or hatred information and

resulting attitudes may spoil the usefulness. The systems ma<y be depravated into possibly dangerous "big brother " like control machineries endangering human freedom. There are also concerns that AI at one day may be as powerful as making human labour unneccary with dramatic impact on job even affecting areas of creativity in the arts , literatue and poetry .

Therefore careful observation and control with the AI models in action is mandatory and also legal restrictions and regulations may become unevitable to ascertain a responsible use of AI.

QUO VADIS NEUROREHABILITATION

VOLKER HÖMBERG
President of World Federation of Neurorehabilitation

Over the last decades significant progress has been made in the field of neurological rehabilitation along with the advances in neurosciences in general.

Several caveats have to be introduced:
We have so far not yet been able to clearly differentiate aspects of restoration of function or reduction of impairment versus mere compensation of activities when restoration is not possible. We are still in a situation that we are lacking a deeper understanding of the underlying neurological restorative processes which will in future become more and more important to shape appropriate restorative custom tailored strategies.

This includes our understanding of the genetic and idiosyncratic individual underpinnings for chances to respond to particular form of treatment. This is the major obstacle to define rehabilitation in a manner to address the individual patient's need and come to a focal personalised form of intervention.

We have made some progress in the field of pharmacological influences on brain recovery in the immediate postacute phase after stroke and traumatic brain injury especially by using new substances with multimodal ways of action. Also important progress was made by the application of more refined ways of biometric analyses especially the agglutination of multiple variables to cover the wide range of possible outcomes.

We are still faced with the situation that hundreds of millions of people in the world do not have any access to decent rehabilitation procedures and facilities.

If we have learned anything beneficial from the bad Corona pandemic, it was an improvement in our ease to use digital communication strategies. This in future in combination with clever use of artificial intelligence will provide new avenues for spreading in a low threshold and affordable way knowledge and skills in the field. Over the decade high-tech and low-tech options have been described in detail to bring the efficacy and efficiency of neurological rehabilitation forward.

In this talk I will give a synopsis of available high-tech options (Robots, brain computer interfaces, the VR and AR technologies, neuro modulation) and contrast them with the available low-tech options such as strategies related to motor or cognitive learning . These low-tech options have the advantage in being affordable and easily accessible also for r nonprofessional caregivers and relatives.

Finally I will address the issue of use of so called "artificial intelligence" in helping to dealing with "big data" sets and eventually ease the rapid update of available knowledge for e.g. guideline design.

THE CHALENGES OF NEUROREHABILITATION IN SERBIA

KONSTANTINOVIC JUBICA[1,2] MITROVIC SINDI[1,2]

1. Faculty of Medicine University of Belgrade
2. Clinic for rehabilitation dr Miroslav Zotovic

The current situation of high prevalence of stroke of 1% with a growth trend is not great. Slow and inadequate progress in functional recovery with a high degree of disability in patients after stroke and after rehabilitation, which makes it the leading cause of disability. Rehabilitation becomes more complex, more expensive, requires additional education and equipment, more time, and more teamwork, with generally slow implementation of innovative technologies. Neurorehabilitation in the Republic of Serbia is an essential segment of rehabilitation that is carried out multidisciplinarily to promote the reduction of disability in people with neurological disorders. Stroke is the second leading cause of death in both sexes over the last decades in the Republic of Serbia. The annual incidence of stroke is 1.72/1000. Mortality due to stroke per year is 1,49/1000 with a significantly decreased trend. Over 100 General Hospitals, neurology clinics, and stroke units provide acute stroke treatment for 40% of total stroke patients. Rehabilitation is carried out at all levels of health care. Of the total number of hospital days in all hospitals, 13% were spent in the physical and rehabilitation medicine departments, of which a smaller number are located at University Centers. The leading provider and

holder of clinical practice and research is Clinic for Rehabilitation, dr Miroslav Zotovic, Faculty of Medicine, University of Belgrade. The Clinic was founded in 1952 as the first of its kind in South-East Europe, with initial cooperation with the Kessler Institute for Rehabilitation (New Jersey, USA). Focused therapeutic requirements encompass various methods under three primary categories: maintaining excitability, facilitating and optimizing motor learning, and developing compensatory skills. Augmentation technique are mainly used in the Clinic and might be considered like standard for impairment oriented treatment The primary focus of clinical research at the Clinic is stimulation to strengthen the sensory-motor systems using electrical stimulation for the upper extremities in tetraplegic and hemiplegic patients; improved locomotion with hybrid orthosis and gait training and low cost robotic devices, for the lower and upper extremities of tetraplegic and hemiplegic patients. The Clinic is the founder of the Serbian Society for Neuroprehabilitation. Considering that neurorehabilitation accounts for approximately 60% of all rehabilitation practice, as well as gaps in knowledge, the association is committed to fostering activities aimed at nurturing education, improving clinical and research skills, and developing clinical practice guidelines relevant to the national healthcare system. The association is also dedicated to facilitating communication among all members of the multidisciplinary neurorehabilitation team as well as with other related public and professional organizations. There are many challenges to consider in neurorehabilitation in the Republic of Serbia. Global challenges in neurorehabilitation are unavoidable due to the lack of standards and key components of education, the need for faster implementation of new knowledge in clinical practice, the design of clinical studies, and the legal regulations governing participation in international projects. The most significant challenge is the widening gap between different clinicians' disciplines and between clinicians and engineers, which is present and requires an updated discussion about bridging it.

Keywords: neurorehabilitation, Serbia, challenges

EFFECTS OF UPPER-LIMB ROBOTS AFTER STROKE: HOW TO MOVE BEYOND THE HYPE?

GERT KWAKKEL
Department of Rehabilitation Medicine, Amsterdam UMC, VU Amsterdam, Amsterdam Movement Sciences, Amsterdam Neuroscience Research Institute, Research Program NeuroVascular Disorders, Amsterdam, Netherlands

Despite the growing enthusiasm surrounding robotic technologies in upper-limb rehabilitation after stroke, it is important to critically evaluate their actual impact on patient outcomes. The integration of these devices into clinical practice must be guided by both evidence and a clear understanding of individual patient needs, rather than by technological advancements alone. Only through a careful, data-driven approach can we ensure that innovation translates into meaningful improvements in recovery and quality of life. Recent developments in upper-limb robotic therapy (UL-RT) have sparked considerable interest in the neurorehabilitation community. Despite promising technological advancements, translating these innovations into meaningful clinical outcomes remains a complex challenge. A critical evaluation of the evidence is essential to determine the actual impact of UL-RT on poststroke recovery and to guide future research priorities. In a recent systematic review and meta-analysis, we showed, after reviewing 90 UL-RT RCTs (N = 4.311) small significant improvements in UL-muscle synergism (Fugl-Meyer Assessment of the UL [FM-UL]) (mean difference 2.23[1.11–3.35]), muscle power (standardized mean difference [SMD] 0.39[0.16–0.61]), motor performance (SMD 0.11[0.00–0.21]), and basic ADLs (SMD 0.28[0.10–0.45]). No overall effects were found for muscle tone (SMD −0.10[−0.26 to 0.07]) or UL-capacity (SMD 0.04[−0.10 to 0.18]), except with exoskeletons (SMD 0.27[0.10–0.43]). Meta-regression analyses revealed a significant positive correlation between baseline and mean FM-UL scores and effect sizes for upper limb capacity (r=0.339; p=0.03). No additional significant subgroup differences or associations were identified in the sensitivity analyses and meta-regressions. Based on these findings, it was concluded that an approximate 3% improvement on FM-UL, without generalization to clinically significant changes at the level of UL capacity, does not warrant additional trials. Meta-regression suggests that selected subjects with some potential of UL-recovery benefit most from UL-RT, especially when started earlier poststroke. In fact, the robustness and consistency of our findings suggest that a better mechanistic understanding about assumed interaction effects between motor recovery and motor learning is needed post stroke. In contrast, UL-RTs designed for rehabilitation require understanding how the continuous changing interaction between motor control and motor learning during stroke recovery can be influenced in a patient-specific and tailored way, acknowledging the need for adaptation. At the same moment, we need to

acknowledge that advances in technological constantly stay ahead of the research (which takes years to conduct and refine). Being optimistic about UL-RTs and certainly not closing the door as emphasized in the discussion of our systematic review, I will show some basic steps to follow first to get beyond the current hype.

Key words (n=9): Stroke, robotics, upper limb, review, meta-analysis, motor recovery, motor learning, motor control, neurorehabilitation.

EFFICACY OF AN AI-BASED DIGITAL NEUROREHABILITATION PROGRAM: RESULTS FROM A 12-WEEK RANDOMISED CONTROLLED TRIAL

PETER LACKNER[2,3], THERESA BLODER[1,3], PHILIPP SCHÖLLAUF[1,3], BURAK BASTÜRK[2], NICOLAS, CALLEJA-DINCER[2]

1. nyra health GmbH
2. Wiener Gesundheitsverbund Klinik Floridsdorf
3. Karl Landsteiner Gesellschaft

Cognitive neurorehabilitation after acquired brain injury aims to reduce impairment, restore functional independence, and promote participation in everyday life (Cicerone et al., 2000). However, long waiting times, high out-of-pocket costs, and a shortage of Speech-Language Pathologists, especially in rural areas, often limit access to therapy, leaving patients' rehabilitation potential unrealised. Mobile therapy applications could help close this gap. Although robust evidence supports tablet-based interventions (Des Roches et al., 2015; Lavoie et al., 2019; Godlove et al., 2019; Choi et al., 2016), no such data exist for an intelligent AI-based digital platform with a multimodal approach.

We therefore developed the nyra therapy software ('myReha' in German), a certified medical-device app for iOS and Android tablets that delivers individualised, high-intensity therapy independent of healthcare-system constraints. Its efficacy was tested in a two-arm randomised controlled trial. Participants in the intervention arm received nyra therapy in addition to care as usual (CAU); controls received CAU only. Cognitive outcomes were assessed with the CERAD-plus battery (Memory Clinic, University Hospital Basel, 2005) at baseline (T1) and after 12 weeks (T2).

Forty-eight neurological patients were enrolled (intervention = 21; control = 27). A linear mixed-effects model showed a significant overall improvement in CERAD-plus total scores ($p < .001$) and a significant Group × Time interaction ($p = .049$), indicating greater gains in the intervention group. Estimated score

changes were +.54 for the intervention arm ($p < .0001$) and +.30 for controls ($p = .0004$), yielding a large effect size (Cohen's $d = 0.87$). An analysis of CAU across both groups revealed no significant differences in content or intensity, confirming that the superior cognitive outcomes in the intervention group are attributable to nyra therapy rather than variability in standard care.

These findings demonstrate that a 12-week digital rehabilitation programme with nyra therapy can significantly enhance cognitive recovery in neurological patients, with clinically meaningful effect sizes. While improvements in both groups may partly reflect spontaneous recovery or practice effects, the superior gains in the intervention group underscore the added value of nyra therapy, a digitally delivered, intensive therapy.

References

Choi, Y. H., Park, H. K., & Paik, N. J. (2016). A Telerehabilitation Approach for Chronic Aphasia Following Stroke. Telemedicine journal and e-health: the official journal of the American Telemedicine Association, 22(5), 434–440.

Cicerone, K. D., Dahlberg, C., Kalmar, K., Langenbahn, D. M., Malec, J. F., Bergquist, T. F., ... & Morse, P. A. (2000). Evidence-based cognitive rehabilitation: recommendations for clinical practice. Archives of Physical Medicine and Rehabilitation, 81(12), 1596–1615.

Des Roches, C. A., Balachandran, I., Ascenso, E. M., Tripodis, Y., & Kiran, S. (2015). Effectiveness of an impairment-based individualized rehabilitation program using an iPad-based software platform. Frontiers in Human Neuroscience, 8, 1015.

Godlove, J., Anantha, V., Advani, M., Des Roches, C., & Kiran, S. (2019). Comparison of Therapy Practice at Home and in the Clinic: A Retrospective Analysis of the Constant Therapy Platform Data Set. Frontiers in Neurology, 10, 140.

Lavoie, M., Bier, N., & Macoir, J. (2019). Efficacy of a self-administered treatment using a smart tablet to improve functional vocabulary in post-stroke aphasia: a case-series study. International Journal of Language & Communication Disorders, 54(2), 249–264.

Lillig, R., Ophey, A., Schulz, J. B., Reetz, K., Wojtala, J., Storch, A., Liepelt-Scarfone, I., Becker, S., Berg, D., Balzer-Geldsetzer, M., Kassubek, J., Hilker-Roggendorf, R., Witt, K., Mollenhauer, B., Trenkwalder, C., Roeske, S., Wittchen, H. U., Riedel, O., Dodel, R., & Kalbe, E. (2021). A new CERAD total score with equally weighted z-scores and additional executive and non-amnestic "CERAD-Plus" tests enhances cognitive diagnosis in patients with Parkinson's disease: Evidence from the LANDSCAPE study. Parkinsonism & related disorders, 90, 90–97.

Memory Clinic University Hospital Basel (2005). CERAD-Plus Testbatterie, überarbeitete Version 2005. German Version.

REWARD CIRCUITRY, DOPA AND REHAB OUTCOME

ANDREAS LUFT
Full Professor for Vascular Neurology and Rehabiliation, University of Zürich, Switzerland

Motivation of the patient is key to a successful recovery and rehabilitation. Not only because it drives compliance and participation in therapy, but also because the plasticity in cortical networks depends on positive reward signals that mediate motivation. The presentation will touch on the neural mechanisms of the interaction between motivation, recovery and rehabilitation and describe successful or promising interventions that specifically utilise motivation to facilitate rehabilitation after stroke.

ADVANCES IN THE TREATMENT OF POST-STROKE APHASIA

PAOLA MARANGOLO
University Federico II, Naples, Italy

Traditionally, language functions were thought to be localized in specific cortical regions, namely, Broca's and Wernicke's areas. Consequently, most conventional treatments for aphasia have focused on paper-and-pencil exercises and computer-based programs aimed at restoring damaged language skills.

In recent years, however, two major research directions have reshaped therapeutic approaches. First, neuroimaging and lesion studies have revealed that perisylvian networks, initially regarded as language-specific, also support fundamental cognitive domains such as working memory, attention, and executive functions. This insight suggests that targeting non-verbal cognitive processes, such as executive functions, may indirectly facilitate language recovery. Within this framework, the motor system has received particular attention because of its close interaction with language.

Second, discoveries about brain plasticity have bridged basic neuroscience and clinical practice. Novel therapeutic strategies, such as pharmacological interventions and non-invasive brain stimulation combined with traditional therapies, capitalize on the brain's capacity to adapt and reorganize, thereby enhancing treatment outcomes.

This talk will provide an overview of these innovative approaches to aphasia rehabilitation, including action-observation therapy, virtual therapy, pharmacological

treatments, and non-invasive brain stimulation. Together, these strategies enrich traditional methods and open new pathways for language recovery.

BEHAVIORAL PHENOTYPE OF DISORDERS OF CONSCIOUSNESS: POSTERIOR FOSSA SYNDROME WITH MUTISM IN ADULTS? CASE SERIES AND SCOPING REVIEW

ERRIKOS MASLIAS[1], I.A. MEYER[1,2], J. JÖHR[1], V. DUNET[3], K. DISERENS[1]

1. Acute Neurorehabilitation Unit, University Service of Neurorehabilitation, Department of Clinical Neurosciences, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland
2. University Hospital of Psychiatry, University of Bern, 3000 Bern, Switzerland
3. Department of Diagnostic and Interventional Radiology, Neuroradiology Unit, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland

AIMS

Posterior Fossa Syndrome (PFS) is a complex neurobehavioral condition frequently reported in children after cerebellar injury but rarely described in adults. Recognizing PFS in adults, particularly through careful clinical examination for subtle signs in patients presenting with a Disorder of Consciousness (DoC) phenotype, is crucial due to its significant diagnostic and prognostic implications. This study aims to characterize the clinical phenotype of PFS in adults with an initial DoC presentation, identify the underlying neuroanatomical structures, and evaluate potential misdiagnoses such as clinical Cognitive Motor Dissociation (cCMD). The overarching goal of this review is to help bridge the gap between unresponsiveness and true unconsciousness, reducing the risk of diagnostic confusion and improving neurorehabilitation strategies.

METHODS

We conducted a scoping review in accordance with the Joanna Briggs Institute (JBI) methodology and PRISMA-ScR guidelines, with a systematic literature search across six databases. Eligibility criteria were defined using the PCC framework: adult and pediatric patients (P), PFS in the context of DoC (C), and the field of clinical neurosciences (C). In parallel, we report a case series of 5 adult patients with PFS and initial DoC phenotype treated in our neurorehabilitation unit. Clinical, imaging, and outcome data were extracted and analyzed. No meta-analysis was conducted due to study heterogeneity.

RESULTS
A total of 130 articles comprising 251 patients (mean age = 12.9 ± 15.7 years; 56.6% male) fulfilled the PFS inclusion criteria of Wickenhauser et al. Most reports were single cases or small series (<10 patients). The majority (82.1%) followed cerebellar tumor resection, most frequently medulloblastoma (47.8%) and the vermis was involved in 77.7% of cases. All patients exhibited mutism; comprehension was preserved in 31.5%. Emotional or behavioral disturbances occurred in 49%, mainly emotional lability (36%) and apathy (33%). Motor dysfunction was present in 92.8%, most commonly ataxia (87.6%) and akinesia (35%). Findings from our case series and scoping review suggest that PFS in adults is frequently underrecognized, as these patients are often classified as being in an Unresponsive Wakefulness Syndrome (UWS) based on the Coma Recovery Scale–Revised (CRS-R). However, the behavioral phenotype characterized by lack of interaction and hypotonia may instead reflect hypokinetic motor behavior due to impaired motor planning following bilateral cerebellar lesions. This distinction implies a fundamentally different prognosis and requires a tailored neurorehabilitation approach.

CONCLUSION
This is the first study to systematically investigate PFS in adults with an initial phenotype of DoC. Our findings support the need for increased clinical awareness of PFS as a differential diagnosis for DoC and regognition of cCMD, especially in cerebellar lesion contexts. Accurate recognition may prevent misdiagnosis, refine prognostic estimations, and inform tailored neurorehabilitation strategies.

FUNCTIONAL NEUROLOGICAL DISORDERS IN CHILDREN –CAN REHABILITATION HELP?

KRISTINA MÜLLER
Research Assistant, Section and Chair Clinical Science of Cognition Prof. F. Binkofski, RWTH Aachen, Germany

Symptoms of a Functional Neurological Disorder (FNS) are frequently encountered by pediatricians, neuropediatricians, psychologists and child psychiatrists. The concept of FNS has considerably changed during the last years. The diagnosis in children and adolescents is made as in adults by identifying the typical clinical "positive" signs. The therapeutic approach is pragmatic and multidisciplinary. The first step to treatment is to explain the nature of the symptoms to the patient and parents. Somatic procedures (special type of physiotherapy) and psychological interventions complement one another and are individually adapted to the patients

needs. An early intervention can hopefully prevent a longstanding chronic course of FNS. A rehabilitation setting is suitable to grant a multidisciplinary approach. We will report our experience and outcome data of 40 patients with functional gait disturbances.

Lendt et al. Monatsschr Kinderheilkd 2023 https://doi.org/10.1007/s00112-023-01766-y
Yong et al Dev Med Child Neurol. 2023;65:1238–1246.

ADVANCES IN BRAIN RECOVERY AFTER STROKE

DAFIN F. MUREȘANU
Chairman Department of Clinical Neurosciences, University of Medicine and Pharmacy Iuliu Hatieganu, Cluj-Napoca, România

BACKGROUND AND PURPOSE
Early pharmacological support for post-stroke neurorehabilitation has seen an abundance of mixed results from clinical trials, leaving practitioners at a loss regarding the best options to improve patient outcomes. The objective of this evidence-based guideline is to support clinical decision-making of healthcare professionals involved in the recovery of stroke survivors.

METHODS
This guideline was developed using the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) framework. PubMed, Cochrane Library and Embase were searched (from database inception to June 2018, inclusive) to identify studies on pharmacological interventions for stroke rehabilitation initiated in the first 7 days (inclusive) after stroke, which were delivered together with neurorehabilitation. A sensitivity analysis was conducted on identified interventions to address results from breaking studies (from end of search to February 2020).

RESULTS
Upon manually screening 17,969 unique database entries (of 57,001 original query results), interventions underwent meta-analysis. Cerebrolysin (30 ml/day, intravenous, minimum 10 days) and citalopram (20 mg/day, oral) are recommended for clinical use for early neurorehabilitation after acute ischaemic stroke. The remaining interventions identified by our systematic search are not recommended for clinical use: amphetamine (5, 10 mg/day, oral), citalopram (10 mg/day, oral), dextroamphetamine (10 mg/day, oral), Di-Huang-Yi-Zhi (2 × 18 g/day, oral), fluoxetine (20 mg/day, oral), lithium (2 × 300 mg/day, oral), MLC601(3 ×

400 mg/day, oral), phosphodiesterase-5 inhibitor PF-03049423 (6 mg/day, oral). No recommendation 'for' or 'against' is provided for selegiline (5 mg/day, oral). Issues with safety and tolerability were identified for amphetamine, dextroamphetamine, fluoxetine and lithium.

CONCLUSIONS
This guideline provides information for clinicians regarding existing pharmacological support in interventions for neurorecovery after acute ischaemic stroke. Updates to this material will potentially elucidate existing conundrums, improve current recommendations, and hopefully expand therapeutic options for stroke survivors.

OPERATIONALIZING BRAIN RESERVE

DAFIN F. MUREȘANU
Chairman Department of Clinical Neurosciences, University of Medicine and Pharmacy Iuliu Hatieganu, Cluj-Napoca, România

The concept of brain reserve (BR) has emerged as a critical factor in understanding the neurobiological resilience of the brain in response to injury and disease. This presentation delineates the neurobiological basis and clinical implications of BR. We discuss the quantification of BR through biomarkers, emphasizing their potential to predict and tailor neurorecovery strategies. A key focus is the operationalization of BR into an Individual Resilience Index (IRI), integrating structural, functional, cognitive, psychological, genetic, epigenetic, lifestyle, and socioeconomic factors.

Recent advancements in neurorehabilitation science highlight the importance of understanding post-lesional brain regulation and recovery mechanisms. Despite significant progress, gaps remain in integrating medical interventions with endogenous processes governing brain function. This presentation reviews the evolution of the BR concept, from the early cognitive reserve studies to contemporary neurobiological models.

We propose a dynamic, interactive definition of BR that encompasses the brain's lifelong capacity to resist various harms. Operationalizing this concept involves developing empirical models to measure and apply BR in clinical settings, with the goal of enhancing patient outcomes in neurorehabilitation.

The role of new technologies in enhancing BR and the implications for clinical care

are explored, along with future research directions. This includes the necessity for large-scale, prospective studies to validate the IRI model and its components. Ultimately, integrating BR into clinical research shifts the paradigm, considering outcomes as interactions between interventions and an individual's BR, thereby refining therapeutic approaches and improving neurorehabilitation efficacy.

COMBINED SPEECH THERAPY AND PHARMACOLOGICAL INTERVENTION TO ENHANCE NEURORECOVERY IN POST-STROKE APHASIA - RESULTS FROM THE ESCAS TRIAL

DAFIN F. MUREȘANU
Chairman Department of Clinical Neurosciences, University of Medicine and Pharmacy Iuliu Hatieganu, Cluj-Napoca, Romania

BACKGROUND:
Stroke-induced aphasia significantly impacts communication and quality of life. Despite the standard treatment being speech and language therapy (SLT), outcomes vary, highlighting the need for additional therapies. Cerebrolysin, a neuroprotective and neurotrophic agent, has shown potential in stroke management. This study addresses the notable gap in research regarding the combined use of Cerebrolysin and speech therapy, evaluating their synergistic potential in the treatment of aphasia.

METHODS:
The ESCAS trial, a prospective, randomized-controlled, double-blinded study was conducted in two Romanian stroke centers. Participants included those with left middle cerebral artery territory ischemic stroke and non-fluent aphasia, enrolled 3-5 days post-stroke. Inclusion criteria were right-handedness and Romanian as mother tongue. Participants received Cerebrolysin or a placebo combined with SLT in ten-day cycles over three intervals. Outcome measures were specifically chosen to reflect the multidimensional nature of recovery from aphasia and included the Western Aphasia Battery (WAB) for language function, the National Institutes of Health Stroke Scale (NIHSS) for neurological deficit, the Modified Rankin Score (mRS) for global disability, and the Barthel Index (BI) for activities of daily living.

RESULTS:
Out of 132 enrolled patients, 123 were included in the Intention To Treat analysis, and 120 in the Per Protocol analysis. The Cerebrolysin group showed significant

improvement in Western Aphasia Battery scores ($p < 0.001$) and National Institutes of Health Stroke Scale scores ($p < 0.001$). Modified Rankin Scale ($p < 0.001$) and Barthel index scores ($p < 0.001$) also improved, with notable differences at the final study visit (Day 90). Safety analysis raised no concerns.

CONCLUSIONS:
Cerebrolysin combined with SLT offers promising potential for enhancing recovery in post-stroke non-fluent aphasia. Significant improvements were observed in language and neurological deficits, underscoring the importance of adjunctive therapies in non-fluent aphasia rehabilitation. Further research with larger cohorts is needed to fully establish the efficacy of this combination therapy.

ROADMAP TOWARDS PRAGMATIC SOLUTIONS FOR IMPROVING THE QUALITY OF LIFE OF PEOPLE WITH NEUROLOGICAL CONDITIONS GLOBALLY: THE LANCET NEUROLOGY COMMISSION ON NEUROREHABILITATION

MAYOWA OWOLABI
Centre for Genomic and Precision Medicine, University of Ibadan, Nigeria
Department of Neurology, University College Hospital, Ibadan, Nigeria
Blossom Specialist Medical Center, Old Bodija, Ibadan, Nigeria

The Lancet Neurology Commission on Neurorehabilitation which seeks to unify global efforts to develop evidence-based pragmatic solutions for improving functioning and the quality of life of people living with neurological conditions worldwide.

Neurological conditions are now the leading causes of disability-adjusted life years (DALYs) and deaths globally. In 2021, they accounted for 443 million DALYs and affected 3.4 billion individuals (43.1% of the global population)4, mostly in low- and middle-income countries (LMIC). Conditions accounting for most DALYs are stroke, neonatal encephalopathy, migraine, dementias, neuropathy, meningitis, epilepsy, neurological complications due to preterm birth, autism spectrum disorder, Parkinson's disease and other major neurodegenerative disorders, traumatic brain and spinal cord injuries, and nervous system neoplasms. In 2020, neurological disorders cost Europe $1.06 trillion, matching heart diseases, cancer and diabetes combined2. Globally, stroke costs nearly $1 trillion annually and occurs at a younger age in LMICs resulting in massive economic losses.

The Commission will co-create evidence-based pragmatic solutions for

neurorehabilitation to equitably improve functioning and quality of life worldwide and reduce economic losses. We will start by conducting a situational and gap analysis. This will involve a review of the burden of relevant neurological conditions; evaluation of the evidence for clinical decision making; policies and initiatives; epistemological frameworks; and emerging innovative solutions (e.g., artificial intelligence and brain computer interfaces, regenerative and precision medicines). To ensure real gains in quality of life, the approach will be holistic and person-centred. An overview of the Commission's workflow will be presented.

COGNITIVE NEUROSCIENCE :MENTAL IMAGERY FOR STROKE REHABILITATION

CATERINA PISTARINI
EFNR -WFNR
ICS Maugeri- Genoa Italy

Mental Imagery is a topic of Cognitive Neuroscience and refers a mental representation of sensory informations without a direct external stimuli. Mental imagery ability is a complex cognitive capacity., involving a number of different cognitive functions and Neuroscience revealed that mental imagery engages widespread brain networks, involving many cerebral circuits.Neurophysiological basis (Decety and colleagues (1996) is that when we imagine to execute a movement ,the same brain areas that are activated when movements are actually executed, are stimulated . Mental Imagery is more and more used in neurorehabilitation in particular in stroke patients where cognitive and emotional functions as motor functions may be seriously impaired .Brain Computer Interface (BCI) is a new strategy for neurorehabilitation where Mental Imagery is the assumption for planning the neurorehabilitation of patients affected by neurological disability. A study on post stroke patients planned in Neuroscience Department of Salvatore Maugeri Institute , in Italy is shown. The cognitive capacity based on Mental Imagery is explored with several neuropsychological test in ineurorehabilitation setting . The results , in particular with Mental Imagery Test , are demonstrated on cognitive performance and on activities in daily living .of patients submitted to neurorehabilitation treatment. Future perspective to verify whether a deficit in "Mental Imagery" can be an early indicator of the rehabilitation outcome, in terms of motor and cognitive performance represents new aims of our investigations about.

COMMUNITY-BASED STROKE REHABILITATION - CONCEPTS AND EVIDENCE

THOMAS PLATZ[1,2], STEPHANIE REICHL[1]

1. Neurorehabilitation Research Group, University Medical Centre, Greifswald, Germany
2. BDH-Klinik Greifswald, Institute for Neurorehabilitation and Evidence-Based Practice ("An-Institut"), University of Greifswald, Greifswald, Germany

Neurological conditions are highly prevalent, affecting at least one in three people in their lifetime. They are the most frequent causes of disabilities in adults with stroke being "number 1" and absolute number of individuals being affected being increasing globally.

It is well established that inpatient rehabilitation post stroke is effective and can prevent disability and the need for institutionalizing. But how about post discharge stroke rehabilitation?

In the talk some results of a systematic review of concepts and evidence for post-discharge stroke rehabilitation are presented. The evidence supports the following conclusions and "take home" messages:

Post discharge rehabilitation can improve ADL capacities, prevent death and institutionalisation. Specifically, (1) early supported discharge and rehabilitation (ESD) for stroke survivors with moderate disability is best performed by experienced teams both co-ordinating and delivering rehabilitation. (2) Stroke liaison workers' support (information provision, networking) is best for those with mild to moderate disability. (3) Home-based rehabilitation by experienced therapists / teams with goal-orientation and a person-centred approach is beneficial both in the subacute and chronic stage. (4) Telerehabilitation is an option when service access is an issue. (5.) High-intensity centre-based focussed outpatient training can be effective to improve function in the chronic stage post stroke.

USE OF PHENOL IN SPASTICITY TREATMENT – A FORGOTTEN DRUG?

ALEŠ PRAŽNIKAR
Slovenia

Spasticity (from Greek spastikos - ''drawing in'') is common a sensory - motor disorder / syndrome due to the central nervous system injury. Spasticity can cause and contributes to disability, reduces quality of life (QoL), and increases economic burden.

In 1829, Good described ''a spastic wryneck as an excess of muscular action on the contracted side''. Pioneering contributions were made by Little (first narrower description - "spastic diplegia", 1843), Erb (probably first usage of term - "spasticität", 1875), Tardieu (definition and scale, 1954) and Lance (consensus definition "a motor disorder, characterized by a velocity dependent increase in tonic stretch reflexes (muscle tone) with exaggerated tendon jerks, resulting from hyper-excitability of the stretch reflex as one component of the upper motor neuron (UMN) syndrome'', 1980). We are still searching for a widely accepted definition of spasticity that would address all the facets of the syndrome.

Today, we tend to understand spasticity on a clinical spectrum from "changed physiology" to "maladaptive neuroplasticity", with several pathophysiological mechanisms, like spastic myopathy and dystonia, pathological co-activation and co-contractions, exaggerated stretch reflex, "central" paresis, and spasms; that can each contribute to the clinical presentation or not, and to a different extend in what can look like a similar clinical presentation. Spasticity may not have exclusively negative consequences for the patient. In a paretic limb, spasticity may yield better function, enabling walking, standing, transfer. Management of spasticity is therefore based upon clinical evaluation of the patient and his preferences. Spasticity management is challenging due to the diversity of patient presentation and goals or aims of treatment. It will normally include a combination of physical (exercise, positioning, stretching, etc.), pharmacological management (baclofen, tizanidine, dantrolene), interventional techniques (TENS, non-invasive neuromodulation, extracorporeal shock wave therapy, muscle and nerve blocks, intrathecal delivery of drugs, surgical methods), often using a variety of different approaches according to the individual patient's needs in a specialised rehabilitation setting.

Pharmacotherapy, botulinum toxin muscle blocks, physical therapy, and intrathecal delivery of baclofen seem to dominate modern treatment of spasticity. Yet, there has been some revived interest in phenol. Phenol, a weak acid and first extracted from coal tar in 1834, is an aromatic organic compound with the molecular formula

C6H5OH. It was first used in medicine by Sir Joseph Lister in his pioneering technique of antiseptic surgery (1865). In 1925 Doppler demonstrated it could be used to sympathectomize rabbit ovarian vessels and promote vasodilatation. Since first attempts of Dogliotti (1931) phenol had slowly become a method to produce sympathectomy in patients with peripheral vascular disease, as a local anaesthetic agent, and intrathecal and epidural applications to control intractable cancer pain. Intrathecal application of phenol to control spasticity was first introduced by Nathan (1959), introduction of phenol muscle / motor points blocks followed in 1966 (Halpern and Meelhuysen), and nerve blocks in 1967 (Khalilli and Betts). Common complications of phenol blocks include pain on injection, bleeding, and infection, dysesthesia or hyperesthesia. There may be damage to skin and necrosis of surrounding muscles, blood vessels, and soft tissues. An accidental intravascular injection may cause tinnitus and flushing. In case of intrathecal phenol one can expect bowel, bladder and sexual dysfunction; systemic effects include nausea and vomiting, central nervous system stimulation, and cardiovascular depression. Adherence to the protocol is mandatory.

With advances of pharmacotherapy, but mostly with introduction of botulinum toxin, phenol was on his way to oblivion. In recent years, however, we see more interest in phenol again. Its clinical value has been well proven. Clinicians should therefore explore phenol intramuscular blocks together with neurolysis as part of the overall spasticity armamentarium when pain and function remain suboptimal despite physical therapy / physical modalities, and after trials of botulinum toxin.

AUGMENTED REALITY (AR) NEUROREHABILITATION: LOOKING BEYOND THE STATE OF THE ARt

MELVYN ROERDINK
Associate professor Technology in Motion at the Department of Human Movement Sciences of Vrije Universiteit Amsterdam, Netherlands

Augmented Reality (AR) technologies are increasingly being explored as innovative tools in neurorehabilitation, offering immersive, interactive environments that can enhance patient engagement, adherence and therapeutic outcomes. In recent years, AR neurorehabilitation has advanced beyond proof-of-concept studies, emphasizing the need for interdisciplinary collaboration, robust clinical trials, and integration with personalized medicine approaches. By "looking beyond the state of the ARt", a forward-looking pledge is made to shift the focus from novelty to impact, advocating for personalized, data-driven, mature AR neurorehabilitation therapeutic and assessment solutions that are clinically meaningful, accessible,

and adaptable to diverse patient populations, meeting the growing demands of modern neurorehabilitation.

NEUROETHICS AND THE ROLE OF EMPATHY

GIORGIO SANDRINI
Dept.of Behavior and Brain Sciences, University of Pavia, Pavia, Italy

Neuroethics is a really complex interdisciplinary field that studies the ethical, legal, and social implications of neuroscience and,more recently,of neurotechnology. Neuroethics also explores the neurobiological basis of ethical norms, moral values and making decision mechanism. Since it addresses the ethical issues that arise from the use of neurotechnologies to monitor or modify the nervous system, its relevance in the field of neuroriabiltation is greatly increased in the last years,
Moreover,neuroethics is concerned with issues such as patient autonomy, identity, and privacy, especially with the increasing relevance of neurotechnology(artificial intelligence and related devices, in particular) in several fields,including medical research and health care. The aspects related to the law(neurolaw) are preminent,but this field is yet controversial due the fast evolution of the technologies and the difficulties to explore their real impact on the individual and society.

Diseases inducing disability, particularly related to cognitive impairment,are of great interest ,since the lesions of the Central Nervous System can completely modify the relationship between the patients and the healthcare professional. Of course, also the caregivers are strongly involved in this changes and stress conditions are very common.

Empathy and its changes play a crucial role in this field.The concept of empathy was greatly modified by discovery of mirror neurons and the mechanisms involved in these pathways can be useful in several neurorehabilitative approaches.The development of a healthcare empathetic system is considered a preeminent goal, starting from the identification of the barriers and teaching the correct behavior to the healthcare professional and caregivers.

Very recently,new technologies related to the artificial intelligence ,as well as Large Language Models, Chatbot, humanoid robots and other devices able to develop new type of interactions with the patients opened a discussion about the neuroethics implications of these new potentially therapeutical perspectives.

NEUROPHYSIOLOGICAL AND NEUROPATHOLOGICAL BASICS OF COGNITIVE REHABILITATION

SIGRID SCHWARTZ
Senior consultant at the Neurological Department /University Clinic Tulln, Austria

1. Neurophysiological and neuropathological basics of cognitive rehabilitation. What is cognitive rehabilitation and who can perform it.
2. The Awareness of Cognitive Problems Post-Stroke – regarding the impact of cognitive deficits (memory, attention, executive function, language) on longtime- outcome and Quality of life.
3. Basic Cognitive Screening in Low-Resource Settings and Learning simple observation-based tools (orientation, recall, attention tests), and adapted bedside assessments when formal tools are unavailable
4. Principles of Goal Setting in Cognitive Rehabilitation: Formulate SMART cognitive rehab goals with emphasis on functional outcomes (communication, ADLs, safety).
5. Attention & Concentration, and Memory – how to apply compensatory methods (memory books, repetition, caregiver cues) and restorative tasks (recall games, sequencing activities).
6. Assessment of Executive Function & Problem-Solving. Develop strategies for planning, organizing, and decision-making through structured tasks (cooking steps, money handling, navigation, plan – a-day).
7. Integrate Caregiver & Family Training in Cognitive Rehabilitation to train caregivers to use environmental cues, reminders, structured routines, and supportive communication.
8. Therapy Evaluation, Follow-Up in Cooperation with caregivers. Use of checklists and caregiver reports to monitor progress; integrate follow-up into existing health routines.
9. Presentation and practical work with the Toolbox Cognition

LONG-TERM EFFECTS OF TBI: FROM SYMPTOMS TO PUBLIC HEALTH BURDEN

LUCA SEBASTIANELLI
Director of the Neurorehabilitation Unit at Vipiteno/Sterzing Hospital, Italy
Co-Chair of the EAN Scientific Panel on Neurotraumatology

Traumatic brain injury (TBI) is increasingly recognized as a chronic neurological condition whose long-lasting consequences extend far beyond the acute insult.

Long-term outcomes encompass not only motor impairment but also pervasive cognitive, emotional, and behavioral disturbances—fatigue, apathy, memory and attention deficits, irritability, depression, and anxiety—that may persist even when motor recovery appears complete. In more severe injuries, delayed complications such as post-traumatic hydrocephalus, epilepsy, and spasticity further contribute to residual disability and rising healthcare costs.

Neurorehabilitation plays a central role in mitigating these effects by fostering neural reorganization, functional recovery, and social reintegration. However, the transition between inpatient rehabilitation and community care remains fragmented, and structured long-term surveillance is still lacking. Digital follow-up systems, case management, and standardized multidomain assessments could facilitate earlier detection of deterioration and more continuous care.

Addressing the public health burden of TBI requires integrated care models that ensure continuity from acute to long-term rehabilitation, apply standardized outcome measures, and promote prevention strategies to reduce recurrence.

Ultimately, TBI should be reframed not as a single acute event but as a preventable and manageable neurological disorder with chronic implications—one that demands sustained health system engagement to support survivors, caregivers, and the broader social fabric affected by brain injury.

ANHEDONIA AFTER STROKE: PREVALENCE AND ASSOCIATED FACTORS IN THE SUBACUTE AND CHRONIC REHABILITATION PHASES

EMMA SEGURA
Postdoctoral researcher at the Cognition and Brain Plasticity Unit of the Bellvitge Biomedical Research Institute, Barcelona, Spain

Anhedonia, defined as the diminished capacity to experience pleasure, is recognized both as a symptom of depression and a behavioural trait that may contribute to its development. To date, anhedonia has been closely linked to depression in stroke survivors, resulting in reduced motivation to complete rehabilitation programs and maintain a healthy active lifestyle.

In an exploratory cohort study, we examined for the first time the prevalence, severity, and associated factors of anhedonia among patients with ischemic and haemorrhagic strokes at subacute and chronic stages. A total of 125 stroke patients with upper-limb motor deficits were recruited, alongside 71 healthy controls matched for age, sex, and education level. Anhedonia was assessed using four items from the Beck Depression Inventory-II that describe its symptoms: loss of pleasure, interest, energy, and sexual interest. We also collected demographic, clinical, motor, cognitive, and mood-related variables, including depression and apathy.

Stroke patients showed a markedly higher prevalence of anhedonia (18.5 - 19.7%) compared to healthy controls (4.3%), regardless of stroke type, motor impairment, and time since stroke (between 1 month and 17 years). Post-stroke anhedonia correlated with decreased motivation and increased fatigue in the long term, factors that may limit engagement in rehabilitation and reinforce anhedonic symptoms. Although anhedonia commonly co-occurs with depression, our analysis revealed that it can emerge independently of depressive symptoms. When controlling for non-anhedonic depression, the correlates of anhedonia differed between stages of recovery: in subacute stroke, it was primarily associated with time since stroke, suggesting a post-lesional onset and early development; in chronic stroke, anhedonia was linked to older age, fatigue, anger, apathy, and reduced vigor, emphasizing its enduring impact on activity levels and psychological well-being. Interestingly, motor and cognitive performance did not significantly correlate with anhedonia levels, implying a neurobiological rather than functional basis. Consistent with findings from other inflammatory disorders, the prevalence of post-stroke anhedonia (~20%) suggests a potential link to neuroinflammatory processes. Persistent post-stroke inflammation and cellular damage may disrupt the brain's reward system, contributing to sustained anhedonia. Age-related neurodegenerative vulnerability may further exacerbate these effects, underscoring

the need for long-term monitoring and interventions, particularly in older adults. To explore possible therapeutic approaches, 60 chronic stroke patients from the cohort study participated in a randomized controlled trial that we conducted to evaluate the effectiveness of an enriched Music-Supported Therapy (eMST) program, which incorporates socio-motivational elements through both individual self-training and group sessions. Compared to conventional rehabilitation, eMST significantly improved upper-limb motor function, emotional well-being, and socio-motivational variables. After completing the intervention, participants undergoing eMST exhibited reduced anger and apathy - key correlates of anhedonia - and a trend toward reduced anhedonia at the three-month follow-up. Additionally, they reported greater enjoyment during sessions, suggesting that eMST may stimulate the reward system, enhance intrinsic motivation, and mitigate anhedonia.
Overall, these findings demonstrate that anhedonia is highly prevalent and persistent after stroke, independent of depression. Addressing anhedonia through motivational, rewarding, and socially engaging rehabilitation programs such as eMST may be essential for improving long-term functional and emotional recovery in stroke survivors.

NEUROREHABILITATION ACROSS THE TRANSLATIONAL SCIENCES SPECTRUM

ȘTEFAN STRILCIUC
Director of the Department of Genomics at Iuliu Haţieganu University of Medicine and Pharmacy Romania

Neurorehabilitation in the context of the translational science spectrum is iterative flow of related knowledge from molecular and cellular insights through clinical innovation to population-level implementation and health policy. Advances in neuroimaging, neurogenetics, and computational modeling have begun to clarify mechanisms of neural plasticity and recovery, while emerging technologies—such as brain–computer interfaces, robotics, and noninvasive neuromodulation—offer new avenues for individualized intervention. Yet, persistent challenges remain in bridging preclinical findings with complex patient realities, standardizing translational frameworks, and ensuring equitable access to innovation. This talk envisions neurorehabilitation as a translational continuum rather than a discrete discipline, emphasizing bidirectional feedback among bench research, clinical practice, and societal outcomes. By integrating precision medicine, data science, and systems-level thinking, neurological recovery is likely to undergo a paradigm shift from reactive into a proactive care in the near future.

NEW ADVANCES AND PERSPECTIVES IN THE APPLIED NEUROSCIENCE OF MUSIC

MICHAEL THAUT, VOLKER HOEMBERG
Foundations for Neurologic Music Therapy

The science of music engaging brain function and how music can be harnessed as an auditory language for brain rehabilitation has made huge progress over the past 2 decades. In this presentation I will provide an overview of our most recent research work as well as the status and role of Neurologic Music Therapy in international neurorehabilitation arenas and new global initiatives for brain rehabilitation. First, the neural mechanisms underlying brain processing in music and clinical translations based on rhythmic entrainment, sonification and augmented auditory feedback, enhanced neural network connectivity and plasticity, and engagement of motivational states with discussed.

Second, new landmark studies on the effects of music in motor control speech/language pathology, and cognitive function will be presented, including dopamine imaging, neuromodulation, intracranial LFP responses to rhythmic entrainment, alignments with DIVA and CODIVA speech models, altered basal ganglia network topology, and neural correlates of music memory preservation in dementia.

Lastly, the clinical profession of Neurologic Music Therapy [NMT] - which is the clinical arm of applied music neuroscience - will be presented within the global professional context of the field of neurorehabilitation. NMT is practiced by about 4000 certified specialists in over 70 countries worldwide. The Academy of NMT is an institutional member of the World Federation Neurorehabilitation since 2023.

MITIGATING INCIPIENT COGNITIVE DECLINE: POSITIONING N-PEP-12 WITHIN PREVENTIVE CARE

ȘERBAN TURLIUC
Department of Psychiatry, "Socola" Institute of Psychiatry, "Grigore T. Popa" University of Medicine and Pharmacy, Iași, Romania

Incipient cognitive decline represents one of the major neuropsychiatric challenges of modern medicine, closely related to population aging and the rising prevalence of mild neurocognitive disorders. Early intervention, prior to the onset of irreversible structural deficits, is the cornerstone of contemporary preventive strategies.

In this context, N-PEP-12 , a peptide complex derived from specific neuronal proteins—comprising neuropeptide 12 and a selected set of amino acids involved in synaptic plasticity—has demonstrated neurotrophic, antioxidant, and anti-inflammatory properties across several experimental and clinical models. Recent evidence indicates that N-PEP-12 administration modulates neurotrophic factor expression (BDNF, NGF), enhances neuronal protein synthesis, and contributes to the preservation of cortico-hippocampal network integrity, supporting memory and attentional processes.

Through these mechanisms, N-PEP-12 emerges as a promising therapeutic option for the early stages of cognitive decline, with the potential to delay progression toward major neurocognitive disorders. The present work discusses the rationale for positioning N-PEP-12 within the framework of preventive care, integrating current evidence and emphasizing the need for a proactive, multidimensional approach to cognitive aging.

Keywords: N-PEP-12, neuropeptides, incipient cognitive decline, neuroprotection, synaptic plasticity, prevention.

FUTURE-ORIENTED BIOMETRIC PRINCIPLES IN NEUROREHABILITATION RESEARCH

JOHANNES VESTER
AMN President

Evidence-based practice strongly knocks on the door of clinical research in neurology and neurorehabilitation. The randomized controlled (or clinical) trial is considered to provide the most reliable evidence and is held as the gold standard in scientific inquiry (Handbook of Clinical Neurology 2013). But how are the chances to improve therapeutic concepts for neurorehabilitation within the demanding framework of evidence-based medicine and guideline development systems such as GRADE?

Recent reports from interdisciplinary working groups consisting mostly of neurologists, neuropsychologists, and biostatisticians, state that to create improvements in neuroscience research, important methodological lessons from the past must be considered in future clinical research. Methodological flaws in both randomized clinical trials (RCTs) and non-interventional observational studies are identified as the major reasons why trials fail to demonstrate efficacy, thus

hindering the development and adoption of beneficial therapies.

Is neurorehabilitation clinical research stifled by backward oriented designs?

One of the most important steps for future research in complex fields such as neurorehabilitation is the shift away from the long-standing "one-criterion paradigm" and binary "success-failure" thinking that has dominated clinical research on pharmacological or non-pharmacological treatments for decades. Outcome after neurorehabilitation is inherently multidimensional. Encouragingly, cutting-edge data analysis procedures are now available that fully align with this multidimensional outcome approach. This new pathway is considered to more accurately reflect the complex reality of recovery, while also enhancing assay sensitivity within the framework of evidence-based medicine.

Another challenge in neurorehabilitation research is the increasing demand for prospective observational studies to complement findings from randomized controlled trials (RCTs) by providing data on the real-world effectiveness and safety of treatments. However, methodological flaws in study design, analysis, and interpretation, as well as the absence of widely accepted standards for quality assessment, have limited the practical value of observational research. A significant milestone has been the recent implementation of the GRACE Principles for High-Quality Observational Studies of Comparative Effectiveness, opening a promising pathway towards improved validity, assay sensitivity, and evidence-based grading. To ensure meaningful and reliable conclusions, such studies must apply rigorous data methodologies and be conducted in full accordance with good clinical practice. In addition to outlining key statistical principles and methodological challenges, the presentation highlights emerging successful approaches and their relevance for future developments in neurorehabilitation research.

FROM THE BROKEN BRAIN TO REBALANCING EMBODIED BRAIN NETWORKS: TOWARDS A NEW THEORY, TECHNOLOGY AND PRACTICE OF NEUROREHABILITATION

PAUL VERSCHURE
Universidad Miguel Hernandez de Elche Distinguished Professor

Stroke neurorehabilitation is facing persistent limitations. For forty years, the impact of interventions on motor recovery has remained stagnant, with outcomes often confounded by spontaneous recovery and limited by high patient variability. The traditional model, viewing stroke as a localised deficit in a modular brain, has

led to a focus on high-repetition training that yields minimal gains, requires levels of intensity practically not feasible in the real world and will not generalise beyond the motor domain. This is compounded by physiological phenomena such as diaschisis, where local lesions induce global network disruptions, underscoring the inadequacy of a purely localised view. The sobering reality calls for a fundamental reorientation of our approach.

This talk proposes a theoretical reformulation that shifts the focus from operant control of movement to the modulation of the brain's embodied, goal-oriented architecture. Grounded in the Distributed Adaptive Control (DAC) theory, we reconceptualise stroke not as a "broken brain" but as a pathological state within the brain's network of networks. Rehabilitation, therefore, should aim to guide this multi-scale system back to a healthy equilibrium by engaging the core principles of volition, agency, and prediction-based learning. The Rehabilitation Gaming System (RGS) was developed to translate this theory into practice, using virtual reality to create an environment where goal-oriented embodied actions drive neuroplasticity. Since 2010, numerous clinical studies have validated the core principles behind RGS. In contrast to repetitive movement, which activates only sensorimotor areas, RGS engages broad brain systems, most critically the frontoparietal Executive Control Network that underlies volition. This system-level engagement creates the necessary conditions for functional reorganisation, leading to clinically significant motor and functional improvements (cognition, language, pain, Quality of Life), irrespective of the patient's time since stroke. These results have been achieved with low-intensity protocols, challenging the dogma that only high volume is effective.

The ambitious goals of the Stroke Action Plan for Europe 2018–2030 invite us to move beyond the current standard of care. This requires the integration of scalable, data-driven technologies that can deliver personalised therapy into the community and home. The RGS platform is precisely this: an AI-driven system that provides continuous, personalised adaptive neurorehabilitation. This approach has proven effective at scale, with high patient adherence. Preliminary results from the RGS@Home Randomised Controlled Trial show significant normalised gains in motor function (Fugl-Meyer), sensation, and activities of daily living. Furthermore, the PHRASE feasibility study, which focuses on using mobile phones as a therapy delivery device, provides further key findings for clinical practice. First, high adherence; Second, we see a significant impact on cognition (MoCA), with improvements correlating directly with training time; Third, the system demonstrates "inverse proportionality": after controlling for ceiling effects, the largest proportional gains are seen in the most severely impaired patients. This demonstrates that a theory-driven, AI-based approach can unlock recovery potential where it is needed most,

providing a clear and scientifically validated path towards a new standard of care in the realisation of the Stroke Action Plan for Europe.

References

Ballester, B. R., Maier, M., Duff, A., Cameirão, M., Bermúdez, S., Duarte, E., ... & Verschure, P. F. (2019). A critical time window for recovery extends beyond one year post-stroke. Journal of Neurophysiology.
Páscoa dos Santos, F., Vohryzek, J., & Verschure, P. F. (2023). Multiscale effects of excitatory-inhibitory homeostasis in lesioned cortical networks: A computational study. PLOS Computational Biology, 19(7), e1011279.
Maier, M., Ballester, B. R., & Verschure, P. F. (2019). Principles of neurorehabilitation after stroke based on motor learning and brain plasticity mechanisms. Frontiers in systems neuroscience, 13, 74.
Verschure, P. F., Dos Santos, F. P., & Sharma, V. (2023). Redefining stroke rehabilitation: mobilising the embodied goal-oriented brain. Current Opinion in Neurobiology, 83, 102807.

STANDARDIZATION IN MILD TRAUMATIC BRAIN INJURY

PIETER VOS
Department of Neurology, Slingeland Hospital, Doetinchem, The Netherlands

TBI is usually classified as mild, moderate, and severe, based on the initial Glasgow Coma Score (GCS) recorded in the Emergency Department. Mild TBI (mTBI) is defined by a GCS between13 and 15. However other paradigms besides classification by injury exist for classifying TBI such as trauma mechanism, pathoanatomy, and pathophysiology.

The most widely used classification by injury severity is based on factors such as history taking from the patient, ambulance personnel or a witness of the accident, the neurological exam (usually the Glasgow Coma Scale) and the duration of loss of consciousness and posttraumatic amnesia.

The likelihood of favorable recovery is high in mTBI. In particular, mTBI without evidence of trauma-related intracranial abnormality on neuroimaging (i.e. uncomplicated mTBI or concussion is understood to be a time-limited disruption of brain function with resolution in days to weeks following injury. After complicated mTBI which is defined as mTBI with acute intracranial injury(usually abnormalities that are visible on a CT scan), studies emphasizing the similarity to moderate TBI with significant impairment at 1 year oppose studies that demonstrate no significant differences in functional ability compared to uncomplicated mTBI.

Hence controversy exists and despite recognition that the natural course of history following uncomplicated mTBI supports an expectation of full recovery different views in (recent) studies stress that many patients with mTBI are left with disabilities

that impair their ability to fulfill their work, school, or family responsibilities.

Factors underlying contradictory findings in the outcome of mTBI include the use of self reported symptoms, the definition of the so-called post-concussion syndrome and or grouping together uncomplicated with complicated mTBI and or problems with defining visible injury.

This presentation will discus the influence of the choice of classification systems on outcome after mTBI stressing the need for further improving definitions and standardization including the validity of self-reported symptoms as a primary outcome measure in the clinical guidance of treating patients with mTBI.

MINIMAL SERVICE REQUIREMENTS IN NEUROREHABILITATION

SABAHAT WASTI
Co-Chair Community Based Rehabilitation an service development special Interest Group; World Federation For Neurorehabilitation

For neurorehabilitation to be effective a set of minimal standards and minimal service specifications is necessary. Minimal service requirements in neurorehabilitation define the essential structural, staffing, and procedural standards necessary to deliver safe, effective, and equitable care to individuals with neurological disorders such as stroke, traumatic brain injury, spinal cord injury, Neurodegenerative disorders, Parkinson's disease, Multiples Sclerosis and developmental neurological impairments. The requirements should be based on the principles of patient-centered, goal-oriented, and evidence-based rehabilitation, delivered through an interdisciplinary / multidisciplinary framework.

Structurally, services must provide dedicated rehabilitation spaces sufficiently equipped for mobility and activities of daily living (ADL) training, ensure full accessibility, and maintain safety and infection control standards.

Clinically, a core multidisciplinary team should comprise of a rehabilitation physician (Physical Medicine & Rehabilitation, trained in neurorehabilitation or Neurologist with training in rehabilitation medicine), Neuro-physiotherapist, Neuro-occupational therapist, neurologically trained speech and language therapist, Neuropsychologist, and Neurorehabilitation nurse. This team forms the backbone of service delivery, supported by additional professionals such as social workers or dietitians when available.

Clinical processes must include comprehensive assessments within 72 hours, individualized goal setting, regular team meetings, the use of standardized outcome measures, and documented discharge planning.

Minimum intensity recommendations suggest 1.5–2 hours of therapy daily, with continuous medical oversight and 24-hour nursing care. Continuity of care across the rehabilitation pathway, from acute to community settings, is a critical component. Disease specific standards are outlined by international organizations such as American Heart Association, National Institute of Clinical Excellence, the World Health Organization and Royal College of Physicians. These ensure that neurorehabilitation services for common conditions operate at a level that maximizes patient recovery, quality of life, and reintegration into society.

I will provide a overview of how such guidelines are formulated and provide insight into World Federation for Neurorehabilitation's direction on this issue.

ETHICS AND INCLUSION: THE IMPACT ON PATIENTS WITH DISABILITY

SABAHAT WASTI
Co-Chair Neurophilosophy and Ethics Special Interest Group
World Federation for Neurorehabilitation

Neurological disability poses wide ranging challenges and it raises several important questions within the field of neurorehabilitation. Patients with varying levels of disabilities frequently seek access to rehabilitation services; however, they often face multiple challenges in doing so.

In this talk I will examine the critical role of ethics and inclusion in neurorehabilitation, emphasizing their impact on individuals with disabilities resulting from neurological conditions. It will highlight the importance of the ethical principles of autonomy, justice, beneficence, and non-maleficence and argue that these are intended to ensure equitable and patient-centered care, yet their application is often challenged by systemic barriers and implicit biases within healthcare systems. These barriers include fiscal restrictions and lack of policies to implement ethical policies.

Inclusion in this context extends beyond physical accessibility. It requires adapting therapeutic approaches to address the diverse cognitive, emotional, and social needs of people living with neurological impairments that have potential to or have led to disability. By promoting inclusive practices, clinicians can enhance patient engagement, support meaningful participation, and improve functional outcomes.

Integrating ethical considerations with inclusive neurorehabilitation frameworks is essential for reducing disparities, respecting patient dignity, and optimizing recovery among individuals with neurological disabilities. To achieve this, there is a need for continuous ethical reflection and the development of inclusive policies that guide practice and promote high-quality, person-centered neurorehabilitation care.

The development of such policies and procedures will also be discussed.

ENRICHED ENVIRONMENTS AND RECOVERY

STEVEN ZEILER
SENRG: Super Room for Enriched Neurological Repair at Green Spring, USA

Typical post-stroke recovery paradigms under-utilize novel, proven, and technology driven approaches to encourage recovery. In this presentation, we will review data suggesting that an enrichment environment paired with technological advancements can help with post-stroke recovery as well as what the future may hold with regards to post-stroke recovery.

AMN ACADEMY FOR MULTIDISCIPLINARY NEUROTRAUMATOLOGY

FOUNDATION OF THE SOCIETY FOR THE STUDY OF NEUROPROTECTION AND NEUROPLASTICITY

UMF UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE IULIU HAȚIEGANU CLUJ-NAPOCA

RoNEURO Institute for Neurological Research and Diagnostic

FUNDAȚIA JURNALUL DE Journal of Medicine and Life

23RD AMN CONGRESS

29-30 MAY, 2026
ISTANBUL | TURKEY

CURRICULUM VITAE

EMRE ADIGUZEL
TURKEY

Prof. Dr. Emre Adıgüzel is the Chief Physician of Ankara Bilkent City Hospital Physical Medicine and Rehabilitation Hospital. He received his medical degree from Gülhane Military Medical Faculty and completed his residency in Physical Medicine and Rehabilitation at Gülhane Training and Research Hospital. His academic and clinical interests include neurorehabilitation, interventional spine procedures, musculoskeletal rehabilitation, spinal cord injury, and innovative rehabilitation technologies. Prof. Adıgüzel has authored numerous peer-reviewed articles in international journals.

MARGO ANNEMANS
BELGIUM

Margo Annemans is trained as an engineer-architect and anthropologist (KU Leuven, Belgium). She is an assistant professor in the programme of Interior Architecture at the Faculty of Design Sciences, University of Antwerp, Belgium. She is fascinated by how the built environment impacts on the physical and mental health and well-being of various users and how insight into user experience can be introduced in architectural design and care practice. Her research mainly focusses on care contexts (acute care, rehabilitation, psychiatry, palliative care, penance) in which she pays specific attention to health and well-being, user-experience, and inclusive design. Margo's interest in how designers, clients, and other actors in care contexts can gain insight into people's experience, motivates her to engage in multiple projects with architecture and healthcare organisations.

In previous research Margo focused on how space can contribute to activating end-users in healthcare environments. Therefore, she combined insights and approaches from multiple disciplines like architecture, anthropology, nursing, and movement science. In 2017, she first explored this topic as a visiting researcher at the Digital Ethnography Research Centre at RMIT. Here her research focused on staff's experience of motion in a psychiatric centre. Later this research developed into studying the relationship between physical activity, care culture, and the built environment.

Currently, Margo broadened her perspective with research into the relation between the in- and outdoor environment of (health)care facilities and how their design contributes to end-users' physical and mental health and well-being. This topic, in combination with the previous ones, is explored in projects in residential care facilities, child and adolescent psychiatry, and a museum park.

From 2010-2015 Margo conducted a PhD on how patients experience hospital buildings and how this experience can inform architectural practice. Before and during her PhD, funded by a Baekeland grant of Flanders Innovation and Technology (VLAIO), she worked at osar architects nv, an architecture company focusing on (health)care.

For her PhD research Margo was awarded the 'L(euven) da Vinci Prize', a prize for a junior researcher who made a valuable contribution to the implementation or future development of knowledge transfer strategies by means of research, research management or research support activities. She received this prize for the fact that her PhD research on the spatial experience of hospitals patients laid the foundations for several follow-up projects in RxD, attracted significant interest from architecture and nursing practice, and shows considerable potential for further knowledge transfer.

JOSE AZORIN
SPAIN

Jose M. Azorin is the Director of the Brain-Machine Interface Systems Lab, Full Professor of the Systems Engineering and Automation Department and Deputy Vice Rector of Research at Miguel Hernández University of Elche (Spain). In addition, he is the Director of the International Affiliate BRAIN (Building Reliable Advances and Innovation in Neurotechnology) Site at UMH, which is the only site of the BRAIN center in Europe (industry-university collaborative research center funded by National Science Foundation from USA). He has been a visiting professor at the University of Houston (USA) and at Imperial College London (United Kingdom). Prof. Azorin has focused his research on the last years mainly in the field of Brain-Machine Interfaces (BMIs). In this field, he has advanced the current state-of-the-art, developing AI-based BMIs able to control lower and upper limb robotic exoskeletons in rehabilitation and assistive applications for people with motor limitations. Over the last years, his research has been funded by prestigious grants from the European Union, other international government agencies, and Spain. He has been the PI of more than 30 research projects. As a result of his intense research activity, he has published more than 80 papers in JCR journals and more than 200 contributions in international and national conferences. In addition, he has given more than 70 invited lectures in international and national conferences, workshops, universities and research centers. Currently, he is president of AITADIS (Iberoamerican Society of Assistive Tecnologies) and he is a Distinguished Lecturer of the IEEE Systems Council.

HEINRICH BINDER
AUSTRIA

Neurologist and psychiatrist with long-standing clinical and academic experience in neurorehabilitation. Emeritus Head of the Neurological Centre at the Otto Wagner Hospital in Vienna and former faculty member of the Medical University of Vienna. His current work focuses on the philosophical and ethical foundations of rehabilitation, disability, and human vulnerability.

DANA BOERING
GERMANY

German neurologist with over 30 years of expertise in the field of neurorehabilitation, for the most part working as Assistant Medical Director under the leadership of Professor Volker Höm-berg, across two different clinics.

The main fields of interest are early rehabilitation, with emphasis on disorders of consciousness, and the management in the subacute phase after severe TBI, as well as spasticity management. A constant issue was recovery after stroke, focusing on a specific concept of impairment-oriented training, as well as the assessment and management of motivational disorders after acquired brain injury.

Research work with the Neurological Department of the University of Essen focused on the role of the cerebellum in motor recovery after stroke, and with the Coma Science Group in Liege, Belgium, on the assessment of nociception in patients with disorders of consciousness.

Currently working as Secretary General of the European Federation for Neurorehabilitation and Chair of the Special Interest Group on Motivation in Neurorehabilitation of the World Federati-on of NeuroRehabilitation (WFNR).

NATAN BORNSTEIN
ISRAEL

EDUCATION

1970-73	University of Sienna, Medicine, Sienna, Italy
1973-79	Technion Medical School, Hifa, Medicine, MD, 1979

Date of receiving specialization certificate: 11 September, 1984
Title of Doctoral dissertation: Dextran 40 in acute ischemic stroke
Name of Supervisor: Dr. Jacob Vardi

FURTHER EDUCATION

1978-83	Tel-Aviv University, Sackler Faculty of Medicine, neurology (residence), Israeli Board certified in Neurology, 1983
1979-83	Tel-Aviv University, Sackler Faculty of Medicine, Post graduate studies in Neurology
1984-87	Sunnybrook Medical Center, University of Toronto, M.R.C stroke, Fellowship

ACADEMIC AND PROFESSIONAL EXPERIENCE

1982-1995	Tel-Aviv University, Neurology, instructor
1991-present	European stroke Conference (ESC), Executive committee
1995-1999	Tel-Aviv University, Neurology, Senior lecturer
1995	Eliprodil CVD 715 clinical trial, Steering Committee
1995-1997	International Stroke Study (IST), Steering Committee
1995-1999	American Academy of Neurology, Member of the International Affairs Committee
1996	Asymptomatic Carotid Stenosis and Risk of Stroke (ACSRS), Advisory Committee
1996-present	The Mediterranean Stroke Society (MSS), President
1996-2002	EFNS, Management Committee

1997-2009	Israeli Neurological Association, Secretary
1999-present	Tel-Aviv University, Neurology, Associated Professor
2001- present	European Society Neurosonology and Cerebral Hemodynamics (ESNCH) Executive committee
2005-present	Neurosonolgy Research Group, Executive committee
2006-present	European Master in Stroke Medicine, Member of faculty
2006-2008	NEST II clinical Trial, Steering Committee
2006-present	SENTIS clinical Trial, Steering Committee
2006-present	CASTA Trial, Steering Committee
2006-present	Brainsgate clinical Trial, Steering Committee
2008- present	World Stroke Association (WSO), Vice president
2009-present	Israeli Neurological Association, Chairman
2009-present	European Stroke Organization (ESO), Member on the board of directors
2010	NEST III clinical Trial, Steering Committee

PROFESSIONAL ACHIEVEMENTS - EDITORIAL BOARD

1991-present	Neurological Research Journal, Guest Editor
1991-present	STROKE, Member of the editorial board
1998-present	European Journal of Neurology, Member of the editorial board
1999-present	Journal of Cerebrovascular disease, Member of the editorial board
2000-present	Journal of Annals of Medical Science, Consulting Editor
2001-present	Journal of Neurological Science (Turkish), Member of the editorial board
2001-present	Acta Clinica Croatica, Member of the editorial Counsil
2003-present	Italian Heart Journal, International Scientific Board
2003-present	Journal of Neurological Sciences, Guest Editor
2004-present	Turkish Journal of Neurology, International Advisory Board
2005-present	Archives of Medical Sciences (AMS), Member of the Editorial Board
2006-present	Journal of Cardiovascular Medicine, International Scientific Board
2006-present	International Journal of Stroke, Editorial Board
2006-present	Acta Neurologica Scandinavica, Editorial Board
2009-present	American Journal of Neuroprotection& Neurogeneration (AJNN) Member of the Editorial Board
2010	Neurosonology, International Editorial Board
2010	Frontiers in Stroke, Review Editor

PROFESSIONAL ACHIEVEMENTS - REVIEWER

1998-present	Lancet, Ad Hoc reviewer

1998-present	Diabetes and its complications, Ad Hoc reviewer
1999-present	Journal of Neuroimaging, Reviewer
1999-present	Journal of Neurology, Ad Hoc reviewer
2000-present	Neurology, Ad Hoc reviewer
2003-present	Israeli Medical Association Journal (IMAJ), Reviewer
2003-present	Acta Neurologica Scandinavica, Ad Hoc reviewer
2006-present	Journal of Neurology, Neurosurgery & Psychiatry, Reviewer
2010-	European Neurology, Ad Hoc reviewer

MEMBERSHIP IN PROFESSIONAL SOCIETIES

1977-present	Israeli Medical Association
1983-present	The Israeli Neurological Association
1985-present	Stroke Council of the American Heart Association (Fellow)
1986-present	American Academy of Neurology
1986-present	Neurosonology Research Group of the World Federation of Neurology
1987-present	Stroke Research Group of the World Federation of Neurology
1990-2008	International Stroke Society
1995-2008	European Stroke Council
1995-present	Mediterranean Stroke Society (MSS)
1998-present	European Neurosonology Society
2005-present	World Stroke Organization (WSO)
2008-present	Fellow of the European Stroke organization (FESO)

KARIN DISERENS
SWITZERLAND

Specialist in neurology, physical medicine and re-habilitation. Co-creator of the Swiss Society for Neurology. Head of the post-acute neuro-rehabilitation clinics (1996-2005), before leading a mobile neuro-rehabilitation team at the University Hospital (2006-2009) and becoming head of the Acute Neuro-rehabilitation Unit of the Neurology service (NRA), in the Department of Clinical Neurosciences, Lausanne University Hospital. After contributing to quality criteria for acute

and post-acute neurorehabilitation in Switzerland, my current research goals concern the evaluation of diagnosis of disorders of consciousness and the effect of neurosensorial stimulation and hyper-acute mobilization using robotic mobilization on rehabilitation potential. Cognitive approaches to creation and emotion are a central focus of the research of the Acute Neurorehabilitation (ANR) Unit. The integrated clinical research in the very acute phase allows developing clinical and multimodal evaluation of behavioral phenotyping and neurosensorial treatment after brain injury with disorders of consciousness inside and during outdoor therapy.

Teaching at the University of Lausanne, Switzerland has included integrating a specific teaching program in the domain of acute neurorehabilitation for pre-graduate and post-graduate training of medical students as well as interdisciplinary professionals. Cognitive behavioral neurology has also been created as a new discipline.

Actual focus of teaching and research concenrns diagnosis and treatment of Disorders of Consciousness and the longterm inclusion professionally and socially of young neurolesioned patients in the community.

STEFANIE DUCHAC
GERMANY

Stefanie Duchac is professor of speech and language therapy at the SRH University in Germany. She has many years of clinical experience in diagnosis and treatment of patients with dysphagia following stroke and traumatic brain injury. In addition to her clinical work, she was regularly involved in various clinical research projects. Since October 2019 she has been an active board member of the European Society of Swallowing Disorders (ESSD), where she now is the head of the ESSD Academy. In addition to her passion about lecturing, as certified business-coach she supports (interprofessional) dysphagia teams. She frequently conducts seminars and workshops, primarily in the field of evidence-based dysphagia management and videofluoroscopy of swallowing. Stefanie is co-founder of the first German-

language dysphagia podcast “IssNix!”, initiator of a national VFSS-register as well as the dysphagia mentorship program. As keynote speaker (e.g. TEDx) she engages herself to raise awareness for dysphagia.

HAKAN EKMEKCİ
TURKEY

EDUCATION INFORMATION
Expertise in Medicine: 1993-1998 Inonu University, Department of ınternal medıcal scıences, Department of neurology
Thesis Name: Clinical and electrophysiological investigation of carpal tunnel syndrome in uremic children undergoing hemodialysis (1998) Thesis Advisor: ABDULCEMAL ÖZCAN
Degree: 1983-1990 Hacettepe University, School of Medicine (English)
Foreign language: English
Affiliation: Professor MD, Selçuk Unıversıty, Faculty of Medicine, Department of Internal Medical Sciences, Neurology Department

MEMBERSHIPS TO SCIENTIFIC ORGANIZATIONS
1. World Sleep Society, Member, 2011-2014
2. Turkish Sleep Medicine Association, Member, 2011
3. Turkish Parkinson Association, Member, 2010
4. Turkish Neurology Association, Member, 1992
5. Turkish Medical Association, Member, 1992

ARTICLES PUBLISHED IN INTERNATIONAL REFEREED JOURNALS:

1. KAPTAN HÜLAGÜ, EKMEKCİ AHMET HAKAN (2019). Long-term Results for Single Electrode-Guided Deep Brain Stimulation Used to Treat Parkinson's Disease / Parkinson Hastalığının Tedavisinde Kullanılan Tek Elektrotlu Derin Beyin Uyarımının Uzun Süreli Sonuçları.. Archives of Neuropsychiatry, 56, 1-4., Doi: 10.29399/npa.23090, (Kontrol No: 4867305)
2. ÇELİK GÖKYİĞİT MÜNEVVER, EKMEKCİ AHMET HAKAN, DURMUŞ TEKÇE HACER, KARLI HAMDİ NECDET, KÖSEOĞLU EMEL, AYSAL FİKRET, et al. (2018). A database for screening and registering late onset Pompe disease in Turkey. Neuromuscular Disorders, 28(3), 262-267., Doi: doi.org/10.1016/j.nmd.2017.12.008, (Kontrol
3. ÖZİÇ MUHAMMET ÜSAME, EKMEKCİ AHMET HAKAN, ÖZŞEN SERAL (2018). Atlas-Based Segmentation Pipelines on 3D Brain MR Images: A Preliminary Study.. BRAIN Broad Research in Artificial Intelligence and Neurosciences, 9(4),

129-140., (Kontrol No: 4835530)
4. EKMEKCİ AHMET HAKAN, KAPTAN HÜLAGÜ (2018). Vagal nerve stimulation has robust effects on neuropsychiatric assessment in resistant epilepsy: a clinical series with clinical experiences.. Turkish Neurosurgery, 29(2), 213-221., Doi: 10.5137/1019-5149.JTN.23065-18.4, (Kontrol No: 4398564)
5. ULUDUZ DERYA, MİDİ İPEK, DUMAN AHMET TAŞKIN, ÇOLAKOĞLU YEŞİLDAĞ SENA, TÜFEKCİ AHMET, BAKAR HACI MUSTAFA, NAZLIEL BİJEN, TASCİLAR NİDA, GOKSAN BAKİ, SUNGUR MEHMET ALİ, KOZAK HASAN HÜSEYİN, DEMİR SERKAN, MISIRLI CEMİLE HANDAN, KÜÇÜKOĞLU HAYRİYE, ÇINAR NİLGÜN, MAYDA DOMAÇ FUSUN, ÖZTÜRK ŞEREFNUR, YAYLA VİLDAN, KARAHAN ALİ YAVUZ, AFSAR NAZİRE, OZAYDIN GOKSU EYLEM, MENGULLUOGLU NECDET, AYTAÇ EMRAH, YEŞİLOT NİLÜFER, İNCE FATMA BİRSEN, YALIN ÖZGÜR OSMAN, ORUÇ SERDAR, DEMİRCİ SEDEN, ŞENOL MEHMET GÜNEY, YILMAZ ARDA, GÖKÇE MUSTAFA, KUSBECİ ÖZGE YILMAZ, TEKGÖL UZUNER GÜLNUR, BATUR ÇAĞLAYAN HALE ZEYNEP, AÇIKGÖZ MUSTAFA, ZEYDAN BURCU, ÖZDAĞ MEHMET FATİH, BAYBAS SEVİM, EKMEKCİ AHMET HAKAN, CABALAR MURAT, YAMAN MEHMET, YÜREKLİ VEDAT ALİ, TEKELİ HAKAN, GENÇ HAMİT, UTKU UYGAR, UÇAN TOKUC FİRDEVS EZGİ, UZUNER NEVZAT, BEKTAŞ HESNA, KABLAN YÜKSEL, KARAKURUM GÖKSEL BAŞAK, MİLANLIOĞLU AYSEL, NECİOĞLU ÖRKEN DİLEK, ALUÇLU MEHMET UFUK (2018). Behçet's disease as a causative factor of cerebral venous sinus thrombosis: subgroup analysis of data from the VENOST study.. Rheumatology, Doi: 10.1093/rheumatology/key153, (Kontrol No: 4331174)
6. SİVRİKAYA ABDULLAH, ÖZTÜRK ŞEREFNUR, EKMEKCİ AHMET HAKAN, SAĞLAM ASLIHAN, ABUŞOĞLU SEDAT, ÜNLÜ ALİ (2018). Elevated Urinary Methylmalonic Acid/creatinine ratio and Serum Sterol levels in Patients with Acute Ischemic Stroke. Revista Romana de Medicina de Laborator, 26(1), 51-58., Doi: 10.2478/rrlm-2018-0003, (Kontrol No: 4326047)
7. GÜNER ÇELİK, DOĞAN ALİ, DENER SEFİK, ÖZTÜRK ŞEREFNUR, KULAKSIZOĞLU SEVSEN, EKMEKCİ AHMET HAKAN (2017). Parathyroid Hormone Levels in the Prediction of Ischemic Stroke Risk. Disease Markers, 2017, 1-8., Doi: 10.1155/2017/4343171, (Kontrol No: 4333012)
8. DUMAN AHMET TAŞKIN, ULUDUZ DERYA, MİDİ İPEK, BEKTAŞ HESNA, KABLAN YÜKSEL, KARAKURUM GÖKSEL BAŞAK, MİLANLIOĞLU AYSEL, NECİOĞLU ÖRKEN DİLEK, ALUÇLU MEHMET UFUK, ÇOLAKOĞLU YEŞİLDAĞ SENA, TÜFEKCİ AHMET, BAKAR HACI MUSTAFA, NAZLIEL BİJEN, TAŞCILAR NİDA FATMA, GÖKSAN MEHMET BAKİ, KOZAK HASAN HÜSEYİN, DEMİR SERKAN, MISIRLI CEMİLE HANDAN, KÜÇÜKOĞLU HAYRİYE, ÇINAR NİLGÜN, MAYDA DOMAÇ FUSUN, ÖZTÜRK ŞEREFNUR, YAYLA VİLDAN AYŞE, KARAHAN ALİ YAVUZ, AFŞAR NAZİRE, ÖZAYDIN GÖKSU EYLEM, MENGÜLLÜOĞLU NECDET, AYTAÇ EMRAH, YEŞİLOT NİLÜFER, İNCE FATMA BİRSEN, YALIN ÖZGÜR OSMAN, ORUÇ SERDAR, DEMİRCİ SEDEN, ŞENOL MEHMET GÜNEY, YILMAZ İBRAHİM ARDA, GÖKÇE MUSTAFA, YILMAZ KÜSPECİ ÖZGE, TEKGÖL UZUNER GÜLNUR, BATUR ÇAĞLAYAN HALE ZEYNEP, AÇIKGÖZ MUSTAFA, ZEYDAN BURCU, ÖZDAĞ MEHMET FATİH, BAYBAS SEVİM, EKMEKCİ AHMET HAKAN, ÇABALAR MUSTAFA, YAMAN MEHMET, YÜREKLİ VEDAT ALİ, TEKELİ HAKAN, GENÇ HAMİT, UTKU UYGAR, TOKUÇ FİRDEVS EZGİ UÇAN, UZUNER NEVZAT (2017). A Multicenter Study of 1144 Patients with Cerebral Venous Thrombosis: The VENOST Study. Journal of Stroke and Cerebrovascular Diseases, 26(8), 1848-1857., Doi: 10.1016/j.jstrokecerebrovasdis.2017.04.020, (Kontrol No: 4835455)
9. AVCI AHMET, DEMİR KENAN, KAYA ZEYNETTİN, MARAKOĞLU KAMİLE, CEYLAN ESRA, EKMEKCİ AHMET HAKAN, YILMAZ AHMET, DEMİR AYŞEGÜL, ALTUNKESER BÜLENT BEHLÜL (2014). Arterial Stiffness and Carotid Intima-Media Thickness in Diabetic Peripheral Neuropathy. Medical Science Monitor, 20, 2074-2081., Doi: 10.12659/MSM.892648, (Kontrol No: 4331022)
10. İNCE FATMA BİRSEN, BENBİR ŞENEL GÜLÇİN, SİVA AKSEL, SAİP SABAHATTİN, UTKU UFUK, ÇELİK YAHYA, NECİOĞLU ÖRKEN DİLEK, ÖZTÜRK ŞEREFNUR, AFŞAR NAZİRE, AKTAN SEVİNÇ, ASİL TALİP, BAKAÇ GÖKSEL, EKMEKCİ AHMET HAKAN, GÖKÇE MUSTAFA, KRESPİ YAKUP, MİDİ İPEK, VARLIBAŞ FİGEN, CİTCİ YALÇINKAYA BEYZA, GÖKSAN MEHMET BAKİ, ULUDUZ Clinical and Radiological Features in CADASIL and NOTCH3 Negative Patients: A Multicenter Study from Turkey. European Neurology, 72(3-4), 125-131., Doi: 10.1159/000360530, (Kontrol No: 4334008)
11. EKMEKCİ AHMET HAKAN, ÖZTÜRK ŞEREFNUR, DEMİR AYŞEGÜL (2013). Mills Syndrome – A Clinical Variant -Case Report. Journal of Neurological Sciences-Turkish, 30(1), 210-218., (Kontrol No: 4334005)
12. KOÇAK YUSUF, ÖZTÜRK ŞEREFNUR, EGE FAHRETTİN, EKMEKCİ AHMET HAKAN (2012). A useful new coma scale in acute stroke patients: FOUR score.. Anaesthesia and Intensive care, 40(1), 131-6., (Kontrol No: 4334044)
13. YILDIZ MUSTAFA, EKMEKCİ AHMET HAKAN, KARLIDAĞ RIFAT, YOLOĞLU SAİM, YİĞİTOL FATMA, BOZTEPE ABDULVAHAP (1997). Ölüm Cezası Üzerine Görüşler: Malatyada Bir Ön Çalışma.. Nöropsikiyatri Arşivi-Arcvihes of Neurophychiatry, 34(3), 153-159., (Kontrol No: 4870028)
14. ÖZCAN ABDULCEMAL, BÖLÜK AYHAN, DURANAY MURAT, EKMEKCİ AHMET HAKAN, BALAT AYŞE, MÜFTÜOĞLU MÜNİFE (1996). Sympathetic skin response in patients with chronic renal failure.. Acta Neurologica Scandinavica, 93, 437-442., (Kontrol No: 4867571)
15. LEAROYD ANASTAZIA E, WOODHOUSE LISA, SHAW LAURENCE, SPRINGG NIKOLA, BERECZKI DANIEL, BERGE EIVIND, CASO VALERIA, CHRISTENSEN HANNE, COLLINS RONAN, CZLONKOWSKA ANNA, ETRIBI ANWAR EL, FARR TRACY D, GOMMANS JOHN, LASKA ANN CHARLOTTE, NTAIOS GEORGE, ÖZTÜRK ŞEREFNUR, POCOCK STUART J, PRASAD KAMENHWAR, WARDLAW JOANNA M, FONE KEVIN, BATH PHILIP M, TRUEMAN REBECCA C, EKMEKCİ AHMET HAKAN (2017). Infections Up to 76 Days After Stroke Increase Disability and Death. Translational Stroke Research, 8(6), 541-548., Doi: 10.1007/s12975-017-0553-3, (Kontrol No: 4973590)

16. SPRİGG NİKOLA, FLAHERTY KETIA, APPLETON JASON P, SALMAN RUSTHAM AL SHAHI, BERECKZI DANIEL, CHRISTENSEN HANNE, CICCONE ALFONSO, COLLINS RONAN, CZLONKOWSKA ANNA, DINEEN ROBERT A, DULEY LELIA, EGEA GUERRERO JUAN JOSE, ENGLAND TIMOTHY, KRISHNAN KAILASH, LASKA ANN CHARLOTTE, LAW ZHE KANG, ÖZTÜRK ŞEREFNUR, POCOCK STUART J, ROBERTS IAN, ROBINSON THOMPSON G, ROFFE CHRISTINE, SEIFFGE DAVID, SCUTT POLLY, THANABALAN JEGAN, WERRING DAVID, WHYNES DAVID, BATH PHILIP M, EKMEKCİ AHMET HAKAN (2018). Tranexamic acid for hyperacute primary IntraCerebral Haemorrhage (TICH-2): an international randomised, placebo-controlled, phase 3 superiority trial. The Lancet, 391(10135), 2107-2115., Doi: 10.1016/S0140-6736(18)31033-X,
17. GODOLPHIN PETER J, MONTGOMERY ALAN A, WOODHOUSE LISA J, BERECZKI DANIEL, BERGE EIVIND, COLLINS RONAN, DIEZ TEJEDOR EXUPERIO, GOMMANS JOHN, LEES KENNEDY, ÖZTÜRK ŞEREFNUR, PHILLIPS STEPHAN, POCOCK STUART T, PRASAD KAMESHWAR, SZATMARI SZABOLCS, WANG YONGJUN, BATH PHILIP, SPRINGG NIKOLA, EKMEKCİ AHMET HAKAN (2018). Central adjudication of serious adverse events did not affect trial's safety results: Data from the Efficacy of Nitric Oxide in Stroke (ENOS) trial.. PLOS ONE, 13(11), 208142, Doi: 10.1371/journal.pone.0208142, (Kontrol No: 4973474)
18. KRISHNAN KAILASH, BEISHON LUCY, BERGE EIVIND, CHRISTENSEN HANNE, DINEEN ROBERT A, ÖZTÜRK ŞEREFNUR, SPRINGG NIKOLA, WARDLAW JOANNA M, BATH PHILIP M, EKMEKCİ AHMET HAKAN (2018). Relationship between race and outcome in Asian, Black, and Caucasian patients with spontaneous intracerebral hemorrhage: Data from the Virtual International Stroke Trials Archive and Efficacy of Nitric Oxide in Stroke trial. International Journal of Stroke, 13(4), 362- 373., Doi: 10.1177/1747493017744463, (Kontrol No: 4973550)
19. WHYNES DAVID K, SPRINGG NIKOLA, SELBY JAMES, BERGE EIVIND, BATH PHILIP M, EKMEKCİ AHMET HAKAN (2013). Testing for Differential Item Functioning within the EQ-5D. Medical Decision Making, 33(2), 252-260., Doi: 10.1177/0272989X12465016, (Kontrol No: 4973746)

PAPERS PRESENTED AT INTERNATIONAL SCIENTIFIC MEETINGS AND PUBLISHED IN PROCEEDINGS:

1. EKMEKCİ AHMET HAKAN, ÖZCAN ABDULCEMAL (2018). Clinical Neurophysiological Assessment of Carpal Tunnel Syndrome in Pediatric Age Group undergoing Hemodialysis.. Union of Thrace Universities 2nd International Health Sciences Congress, 1(1), (Tam metin bildiri), (Kontrol No: 4870142)
2. ÖZİÇ MUHAMMET ÜSAME, ÖZBAY YÜKSEL, EKMEKCİ AHMET HAKAN (2015). Çoklu Değişken Kullanarak YSA ile Demans Sınıflandfırılması. / Classification of dementia with ANN using multiple variable.. 2015 23nd Signal Processing and Communications Applications Conference (SIU), Doi: 10.1109/SIU.2015.7130311, (Tam metin bildiri), (Kontrol No: 4334130)
3. ÖZMEN GÜZİN, EKMEKCİ AHMET HAKAN, YILMAZ BURAK (2017). Comparison of Different Classification Methods Using Autoregressive Estimation for Cervical Muscles Based sEMG Signals.. International Conference on Engineering Technologies (ICENTE 17), 292-295., (Tam metin bildiri), (Kontrol No: 4870302)
4. ÖZİÇ MUHAMMET ÜSAME, ÖZŞEN SERAL, EKMEKCİ AHMET HAKAN (2017). A Novel Feature Extraction Approach with VBM 3D ROI Masks on MRI.. International Conference on Medical and Biological Engineering, 523(530), Doi: 10.1007/978-981-10-4166-2, (Tam metin bildiri), (Kontrol No: 4870239)
5. ÖZİÇ MUHAMMET ÜSAME, ÖZŞEN SERAL, EKMEKCİ AHMET HAKAN (2017). MR Görüntülerinde Voksel Tabanlı Morfometrik Analiz. / Voxel Based Morphometric Analysis on MR Images.. International Artificial Intelligence and Data Processing Symposium, (Tam metin bildiri), (Kontrol No: 4870313)
6. ÖZMEN GÜZİN, ÖZBAY YÜKSEL, EKMEKCİ AHMET HAKAN (2014). Servikal Bölgede Frekans Özellikleri Kullanarak Kas Yorgunluğu Değerlendirilmesi. / The Evaluation of the Muscle Fatigue using Frequency Features in the Cervical Region.. 22nd Signal Processing and Communications Applications Conference (SIU), Doi: 10.1109/SIU.2014.6830670 , (Tam metin bildiri), (Kontrol No: 4334068)
7. TORKAMANİ AZAR MASTANEH, EKMEKCİ AHMET HAKAN, KAPTAN HÜLAGÜ, OKATAN ALİ (2013). Comparison of spectral changes in EEG recordings of an epileptic patient before and after the vagal nerve stimulator implantatio.. SiNAPSA Neuroscience Conference 'xx13 (SNC'xx13), (Özet bildiri), (Kontrol No: 4334060)
8. EKMEKCİ AHMET HAKAN, TORKAMAMANİ AZAR MASTANEH, KAPTAN HÜLAGÜ, ÖZTÜRK ŞEREFNUR (2015). Detection of Significant Spectral and Spatial Variations in Independent Components of Pre- and Post-VNS EEG Data: A Group Case Study.. 67th Annual Meeting of the American Academy of Neurology, (Özet bildiri), (Kontrol No: 4974023)

NATIONAL/INTERNATIONAL BOOKS WRITTEN:

- Epilepsi 100 Temel Madde (2001)., EKMEKCİ AHMET HAKAN, ÇALIYURT OKAN, Nobel Tıp Kitabevleri, Editör:Ahmet Hakan EKMEKÇİ, Basım sayısı:1, Sayfa Sayısı 211, ISBN:9799754200514, Türkçe(Kitap Tercümesi), (Kontrol No: 4332164)

CHAPTERS IN WRITTEN NATIONAL/INTERNATIONAL BOOKS:

- Adams and Victor s Principles of Neurology, Bölüm adı: (İlaçlar, Toksinler ve Diğer Kimyasal Ajanların Yol Açtığı Nörolojik Hastalıklar.) (2011)., ÖZTÜRK ŞEREFNUR, EKMEKCİ AHMET HAKAN, Güneş Tıp Kitabevleri, Basım sayısı:9, ISBN:978-975-277-367-7, Türkçe(Kitap Tercümesi), (Kontrol No: 4884074)
- Hipertansiyona Her Yönüyle Yaklaşım., Bölüm adı:(Hipertansiyon ve Uyku) (2014)., EKMEKCİ AHMET HAKAN, Selçuk Üniversitesi Tıp Fakültesi, Editör:Prof. Dr. Şerefnur Öztürk, Basım sayısı:1, Sayfa Sayısı 186, ISBN:9786058465008, Türkçe(Bilimsel Kitap), (Kontrol No: 4332171)
- Nörolojik Bilimler Hemşireliği Kanıta Dayalı Tıp Uygulamaları., Bölüm adı:(Guillain-Barré Sendromlu ve Diğer Periferik Nöropatili Hastalarda Tedavi) (2014)., EKMEKCİ AHMET HAKAN, ÖZTÜRK ŞEREFNUR, Nobel Tıp Kitabevi, Editör:Woodward Sue, Mestecky Ann-Marie, Basım sayısı:1, Sayfa Sayısı 654, ISBN:9789754209631, Türkçe(Kitap Tercümesi), (Kontrol No: 4332196)
- Klinik Nöroloji Atlası, Bölüm adı:(Motor Nöron ve Periferik Sinir Hastalıkları) (2011)., EKMEKCİ AHMET HAKAN, BüyükHarf Tıp Yayınları, Basım sayısı:3, ISBN:9786056225420, Türkçe(Kitap Tercümesi), (Kontrol No: 4332763)
- Güncel Hipertansiyon., Bölüm adı:(Hipertansiyon ve Uyku.) (2017)., EKMEKCİ AHMET HAKAN, İstanbul Tıp Kitabevleri, Editör:Şerefnur ÖZTÜRK, Basım sayısı:1, ISBN:9786059528283, Türkçe(Bilimsel Kitap), (Kontrol No: 4972908)

ARTICLES PUBLISHED IN NATIONAL REFEREED JOURNALS:

- ÖZMEN GÜZİN, EKMEKCİ AHMET HAKAN (2017). Classification of Cervical Disc Herniation Disease using Muscle Fatigue based surface EMG signals by Artificial Neural Networks. International Journal of Intelligent Systems and Applications in Engineering, 5(4), 256-262., Doi: 10.18201/ijisae.2017533901, (Kontrol No: 4326057)
- EKMEKCİ AHMET HAKAN, YILMAZ SETENAY ARZU, ÖZİÇ MUHAMMET ÜSAME, ÖZBAY YÜKSEL, SEÇİLMİŞ KERİMOĞLU ÖZLEM, ÇELİK ÇETİN, ÖZTÜRK ŞEREFNUR (2016). Hyperemesis Gravidarum and Cerebral Electrophysiology Dtermination of Cerebral Localization through Electroencephalography Signal Processing. / Hiperemezis Gravidarum ve Serebral Elektrofizyoloji: Elektroensefalografi Sinyal İşleme Yöntemi ile Serebral Lokalizasyon Belirleme.. Turkish Journal Of Neurology, 22(2), 73-79., Doi: 10.4274/tnd.94695, (Kontrol No: 4333026)
- ÖZDEMİR GÖKHAN, KIZILDAĞ NAZIM, EKMEKCİ AHMET HAKAN, GÜMÜŞ HALUK, AYGÜL RECEP, ÖZTÜRK ŞEREFNUR (2018). Üçüncü Basamak Bir Nöroloji Kliniğinin Karotis Arter Stentlemesi Deneyiminin Retrospektif Değerlendirilmesi. / Retrospective Evaluation of Carotid Artery Stenting Experience of a Third Stage Neurology Clinic.. Turkish Journal of Cerebrovascular Diseases, 24(1), 14-18., Doi: 10.5505/tbdhd.2018.95867, (Kontrol No: 4326033)
- YILDIZ MUSTAFA, YAZICI AYLA, ÜNAL SÜHEYLA, AKER TAMER, ÖZGEN GÜLİZ, EKMEKCİ AHMET HAKAN, DUY BAKİ, TORUN FUAT, ÜNSAL GÜL, COŞKUN CENK SİBEL, SİPAHİ BİRSEN, ÇAKIL GÖNÜL, ERYILDIZ MEDİNE (2002). Şizofreninin Ruhsal-Toplumsal Tedavisinde Sosyal Beceri Eğitimi -- Belirtilerle Başetme ve İlaç Tedavisi Yaklaşımının Türkiye'xxde Çok Merkezli Bir Uygulaması. / Social skills education in psycho-social treatment of schizophrenia.. Turkish Journal of Psychiatry, 13(1), 41-47., (Kontrol No: 4332874)
- YILDIZ MUSTAFA, BOZTEPE VAHAP, EKMEKCİ AHMET HAKAN, BEREKETOĞLU MEHMET ALİ, ÖZBEY BEDİ (1997). Psikiyatri Dışı Hekimlerin Psikotrop İlaç Kullanımları : Bir Ön Çalışma.. Journal of Turgut Ozal Medical Center, 4(1), 76-79., (Kontrol No: 4868132)
- YILMAZ HİKMET, MÜFTÜOĞLU NEYAL MÜNİFE, ÖZCAN CEMAL, İLHAN ATİLLA, EKMEKCİ AHMET HAKAN (1997). Migren Başağrısında Sempatik Deri Yanıtı. / Sympathetic skin responses in migraine headache.. Journal of Turgut Ozal Medical Center, 4(3), 285-290., (Kontrol No: 4332865)

PAPERS PRESENTED AT NATIONAL SCIENTIFIC MEETINGS AND PUBLISHED IN PROCEEDINGS BOOKS:

- EKMEKCİ AHMET HAKAN, ÖZTÜRK ŞEREFNUR, KAPLAN ESRA (2011). Multipl Sklerozlu Hastalarda Trigeminal Somatosensoryal Uyarılmış Potansiyeller. 27. Ulusal Klinik Nörofizyoloji Kongresi, (Kontrol No: 4884781)
- EKMEKCİ AHMET HAKAN, MÜFTÜOĞLU MÜNİFE, BÖLÜK AYHAN, ÖZCAN ABDULCEMAL, YILMAZ HİKMET, ERTÜRK ÖZCAN (1994). Do We Underestimate Electroencephalography?. 3rd Mediterranean Epilepsy Conference, (Kontrol No: 4870054)
- ÖZMEN GÜZİN, ÖZBAY YÜKSEL, EKMEKCİ AHMET HAKAN (2014). EMG Sinyallerinde Kas Yorgunluğunun YSA ile Sınıflandırılması.. Tıp Teknolojileri Ulusal Kongresi (TIPTEKNO 14), (Kontrol No: 4334090)
- ÖZİÇ MUHAMMET ÜSAME, ÖZBAY YÜKSEL, EKMEKCİ AHMET HAKAN (2014). Beyin MR Görüntülerinde Alzheimer Hastalığının Özniteliklerinin Çıkarılması. / Extraction of Features of Alzheimer Diseases on Brain MR Images.. Tıp Teknolojileri Ulusal Kongresi (TIPTEKNO 14), 38- 41., (Kontrol No: 4870326)
- EKMEKCİ AHMET HAKAN (2014). Olgularla Demansta Malnutrisyon Tedavisi.. 7. Akademik Geriatri Kongresi 2014, (Kontrol No: 4885011)
- EKMEKCİ AHMET HAKAN, AKINCI ÖZLEM, DEMİR ABDULLAH, ÖZTÜRK ŞEREFNUR (2012). Çocukluk Çağı Çene Yapısı

Bozukluğunun Giderilmesinin Uyku Kalitesi Üzerine Etkisi.. 48. Ulusal Nöroloji Kongresi, (Kontrol No: 4887511)

- ÖZAKBAŞ SERKAN, İDİMAN EGEMEN, SİVA AKSEL, SAİP SABAHATTİN, ALTINTAŞ AYŞE, KARABUDAK RANA, TUNCER KURNE ASLI, YÜCEYAR AYŞE NUR, EKMEKCİ ÖZGÜL, TURAN ÖMER FARUK, HANOĞLU TAŞKAPILIOĞLU ÖZLEM, TERZİ MURAT, TAMAM YUSUF, TAŞDEMİR NEBAHAT, PETEK BALCI BELGİN, SOYSAL AYSUN, KALE İÇEN NİLÜFER, ZORLU YAŞAR, TİFTİKÇİOĞLU BEDİLE İREM, IŞIK NİHAL, EFENDİ HÜSNÜ, BOZ CAVİT, CANBAZ KABAY SİBEL, AKMAN DEMİR GÜLŞEN, GEDİZLİOĞLU MUHTEŞEM, KIYLIOĞLU NEFATİ, TOMBUL TEMEL, GÖKGÜL ALPER, YANDIM KUŞCU DEMET, MAVİOĞLU HATİCE, ÇELEBİ ARİF, MİRZA MERAL, TOĞROL RİFAT ERDEM, KOÇER EMİNE BELGİN, ALP RECEP, YAYLA VİLDAN AYŞE, ÖZTÜRK ŞEREFNUR, EKMEKCİ AHMET HAKAN, SELEKER FERAY, AYDIN GÜNGÖR HÜLYA, YÜCESAN CANAN, GENÇER GENÇ, BİLGİÇ ADNAN BURAK, TAN MELİHA (2013). Multipl Skleroz Hastalığı Tanı Süreci Klinik ve Radyolojik Bulgular ile Yardımcı İncelemelerin Yeri.. 49. Ulusal Nöroloji Kongresi, (Kontrol No: 4887623)

OTHER PUBLICATIONS:

- MAKALE Özgün Makale : EKMEKCİ AHMET HAKAN (2016). Demansta Malnütrisyon Tedavisi.. Actua Medicine, 24(5), 37-42.(Özgün Makale), (Kontrol No: 4890023))

PROJECTS:

- TICH-2, Diğer (Uluslararası), Yürütücü:ÖZTÜRK ŞEREFNUR, Araştırmacı:EKMEKCİ AHMET HAKAN, , 01/03/2001 - 30/09/2013
- ENOS, Diğer (Uluslararası), Yürütücü:ÖZTÜRK ŞEREFNUR, Araştırmacı:EKMEKCİ AHMET HAKAN, 01/04/2001 - 31/03/2013
- Behcet's disease as a causative factor of cerebral venous sinus thrombosis: subgroup analysis of data from the VENOST study. , ARAŞTIRMA PROJESİ, Yürütücü:ÖZTÜRK ŞEREFNUR, Araştırmacı:EKMEKCİ AHMET HAKAN, , 01/06/2001 - 01/06/2013
- Late Onset Pompe Disease National Registry Study., ARAŞTIRMA PROJESİ, Yürütücü:SERDAROĞLU OFLAZER PİRAYE, Araştırmacı:EKMEKCİ AHMET HAKAN, 05/09/2012 - 31/12/2014

AWARDS:

- Best E-Poster Award, CONY, GERMANY, 2014
- Oral Presentation Third Prize, Medical Technologies National Congress, 2014
- Research Article Second Prize, Turkish Neurology Association, 2016

POSTGRADUATE THESIS CONSULTANCY

- Comparison of sleep rem period disorders and atony in patients with sleep disorders, Parkinson's disease, Parkinson's plus syndrome and non-Parkinson's sleep apnea, ESRA KAPLAN REÇBER, (2013). Selçuk University, No: 359386
- Comparison of serum cytokine levels during attack and remission periods in multiple sclerosis patients and their relationship with the disability scale (EDSS), ASLIHAN GEZER, (2016). Selçuk University, No: 447176
- The relationship between tryptophan metabolites and type and severity of disease in multiple sclerosis, ŞAZİYE MELİKE IŞIK (2020). Selçuk University, No: 680668

MARIE ELF
SWEDEN

Marie Elf is a Professor of Nursing at Dalarna University, Sweden. She has a clinical background in nursing and received her PhD at Chalmers University of Technology, Department of Architecture, where she studied the design process of healthcare environments. Her research focuses on healthcare environments and their influence on care quality and experiences. She leads the research group Environment, Technology and Participation and collaborates across disciplines and with healthcare providers to develop sustainable and person-centred care solutions.

PAMELA ENDERBY
UK

Pam is a qualified as a Speech and Language Therapist and in an early stage in her career combined research with clinical practice. She worked in the NHS in London and Bristol where she set up the Speech and Language Research Unit and the 1st UK AAC centre. Became Chair of the Royal College of Speech and Language Therapy 1994 -96. In 1995 she moved to Sheffield to a combined NHS and University research post. At the University she has held the positions of Head of Dept and Dean of the Faculty of Medicine. She has been the Clinical Director of the South Yorkshire Comprehensive Local Research Network and Chair of Sheffield Healthwatch.

Pam was awarded a Fellowship of the College of Speech Therapists and was honoured with an MBE in 1984 and an OBE in 2018 for services to speech and language therapy. A DSc was awarded by the University of the West of England

in 2000 and by Sheffield University in 2022. In 2012 she was awarded the Robin Tavistock Award for her contribution to aphasia and the Distinguished scholar was awarded by the Society for Research in Rehabilitation in 2016. Pam has a passion for and has worked on outcome measurement for more than 4 decades. She has been the lead supervisor for many successful doctoral students, the principal investigator on more than 50 research projects spanning 3 decades. She is the principal author of 15 books and published more than a 240 peer-reviewed journal articles.

BELGIN ERHAN
TURKEY

Professor Belgin Erhan is the Head Physician at Istanbul Medeniyet University, School of Medicine, Department of Physical Medicine and Rehabilitation.
She is the Chair of International Spinal Cord Society (ISCoS) Prevention Committee since 2021 and a Board Member of ISCoS.
Prof. Erhan received her MD degree and completed her residency at Istanbul University. In 1993 she worked as a visiting resident at West Los Angeles VA Medical Center as a part of the University of California Los Angeles (UCLA) Multicampus PMR Residency Programme.

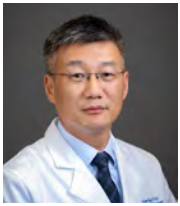
Her areas of expertise are the rehabilitation of spinal cord injury, spasticity management and pain management.
She is a nationally recognized trainer on ultrasound guided botulinum toxin injections.
She is the founder and the President of (national) Neurotoxin Society
She is a member of ISPRM Spasticity SIG and Pain SIG
She is the chair of the Spasticity Study Group of Turkish Society of PMR.

ANTONIO FEDERICO
ITALY

Prof. Antonio FEDERICO, Specialist in Mental and Nervous Diseases, is Emeritus Professor of Neurology at University of Siena, Siena, Italy where he was director of Dept. Neurological Sciences, of the Unit of Neurology and Neurometabolic Diseases, of the PhD programme in Clinical Neurosciences and of the Postgraduate School of Neurology and vice-Rector of the University. He was President of the Italian Society of Neurology, Chairman of the Scientific Committee of the European Academy of Neurology and of the EAN Panel on Rare Neurologic Diseases. Actually he chairs the Specialist Group on Rare Neurologic Diseases of the World Federation of Neurology. He was Editor-in-chief of Neurological Sciences, Springer for more than 10 years; he is in the editorial board of many Journals; he published more than 600 articles in the main international journals and many books and Neurology Manuals (the most recent is Neurology in Migrants and Refugees, Springer-Verlag Editor, 2023). Finally he received two Honoris Causa Degrees in Medicine and Pharmacy in International Universities (Bucharest and Cluj-Napoca).

In the juin 2025, he received the 2025 Service Award by European Academy of Neurology.

His main interest is Clinical Neurology, with particular regards to Neurodegenerative diseases, Parkinson's diseases and other movement disorders, myopathies and neuropathies, white matter diseases, and rare neurologic disorders and neurometabolic diseases.



WAYNE FENG
USA

Dr. Wayne Feng is a tenured Professor of Neurology and Biomedical Engineering at the Duke University School of Medicine, where he serves as Chief of the Division of Stroke and Vascular Neurology and Medical Director of the Duke Comprehensive Stroke Center. A board-certified vascular neurologist and physician–scientist, Dr. Feng's research focuses on developing imaging biomarkers to predict post-stroke motor outcomes and advancing non-invasive brain stimulation technologies—including transcranial direct current stimulation (tDCS), vagus nerve stimulation (VNS), low-intensity focused ultrasound stimulation (LIFUS), and transcranial magnetic stimulation (TMS)—to enhance motor, visual, and pain recovery after stroke and reduce long-term disability.

He is the lead Principal Investigator of the NIH-funded TRANSPORT2 trial (Lancet Neurology, 2024), a multicenter phase II study within the NINDS StrokeNet evaluating tDCS for post-stroke motor recovery. To date, Dr. Feng has secured more than $20 million in NIH funding as contact PI or Co-PI across mechanisms including P50, U01, U24, R01, and UG3/UH3 awards, with additional grants pending.

Dr. Feng has authored over 160 peer-reviewed publications (H-index = 45) in high-impact journals such as Annals of Neurology, The Lancet Neurology, and The Lancet, with two cover-featured articles in Brain Stimulation. He holds multiple patents in ultrasound neuromodulation currently under licensing to a North Carolina–based medical device company and co-edited the book Cerebral Venous System in Acute and Chronic Brain Injuries.

A respected leader and mentor, Dr. Feng has received numerous honors, including the American Heart Association's inaugural Stroke Rehabilitation Award (2015), the Franz Gerstenbrand Award (WFNR, 2016), and the Arthur Guyton New Investigator Award (COSEHC, 2016). He currently serves as Section Chair of Neural Repair and Rehabilitation at the American Academy of Neurology, an At-Large Member of the World Federation of Neurorehabilitation (WFNR), and Director of the NIH StrokeNet Recovery Fellowship Program. Through the WFNR Global Mentoring Program, he continues to champion mentorship and international collaboration in stroke recovery research.

PAOLO GARGIULO
ICELAND

Paolo Gargiulo is a full professor at Reykjavik University with a distinguished academic background.

He studied at TU Wien and completed his PhD in 2009. His primary research interests and expertise lie in medical image processing, neuroengineering, 3D printing, and medical technologies.

At Landspítali University Hospital, he established a 3D printing service that has supported surgical planning for over 300 operations, significantly impacting Iceland's healthcare system and earning international recognition for his pioneering work in the field.

Paolo Gargiulo is the founder and director for the Institute of Biomedical and Neural Engineering, which encompasses advanced research facilities such as a high-density electroencephalographic system (256-EEG), Postural control platform and Virtual reality system and 3D printing and additive manufacturing center a postural control platform, a virtual reality system, and a center for 3D printing and additive manufacturing.

He has published over 100 scientific articles, books, and book chapters across diverse fields and has presented his work at numerous international conferences and workshops. He has also participated in several EU-funded research projects, including RESTORE, P4FIT and SINPAIN.

In 2023, Paolo received the prestigious Scientist of the Year Award at Reykjavik University and was granted an Excellence Award by the Icelandic Centre for Research to study postural control responses as biomarkers for neurodegenerative conditions.

He is also the co-founder of the startup company Heilalabs, which focuses on studying brain aging and developing predictive evaluation metrics for neurodegenerative diseases.

In May 2025, the President of the Italian Republic honored him as Cavaliere dell'Ordine della Stella d'Italia (Knight of the Order of the Star of Italy) for his scientific achievements and contributions to international cooperation.

SONIA CROTTAZ-HERBETTE
SWITZERLAND

Dr Sonia Crottaz-Herbette is a Lecturer at the Department of Clinical Neurosciences, Centre hospitalier universitaire vaudois in Lausanne. Her research investigates rapid cortical plasticity and its translation into innovative neurorehabilitation strategies, with a particular emphasis on prism adaptation and immersive virtual reality. Dr Crottaz-Herbette has made major contributions to understanding how sensorimotor adaptation reshapes attentional networks at both regional and large-scale levels. Extending this work to clinical populations, she has demonstrated that adaptive training can promote short-term plasticity and functional reorganization in the post-stroke brain. Her current research integrates behavioral methods, neuroimaging, and adaptive technologies to develop precision rehabilitation approaches.

MAX HILZ
GERMANY

specialized in Neurology, Clinical Neurophysiology, Neurological Intensive Care Medicine and Disorders of the Autonomic Nervous System (ANS). He was Professor of Neurology, Medicine, and Psychiatry at New York University, New York, NY, Chair in Autonomic Neurology at the Institute of Neurology, Queen Square, London, UK, and until April 2019 Professor of Neurology at the University of Erlangen-Nuremberg, Germany. Since June 2015, he is also Adjunct Professor of Neurology at Icahn School of Medicine at Mount Sinai, New York, NY, USA. Moreover, he holds Honorary Professorships at the University of Transylvania in Brasov, Romania, and the University of Zhengzhou, China.

He chaired the Autonomic Disorders Research Group in the World Federation of Neurology, the EAN Autonomic Nervous System Scientific Panel, the Autonomic Section of the American Academy of Neurology, and was President of the German Autonomic Society and of the European Federation of Autonomic Societies. He is on the editorial board of Clinical Autonomic Research, of Neurology and Therapy, the European Journal of Neurology, Associate Editor of Autonomic Neuroscience: Basic and Clinical, and of Neurological Sciences. He was part of the small group that developed the Autonomic Disorders subspecialty examination of the American United Council of Neurologic Subspecialties, UCNS. Prof. Hilz also serves as advisor to the European Medicines Agency, EMA, on issues related to the autonomic nervous system. He co-authored several guidelines, e.g., on syncope, erectile dysfunction, orthostatic hypotension, supine hypertension, and on diabetic neuropathy, and he published 370 original and review articles and book-chapters, as well as the textbook "Autonomic Disorders in Clinical Practice".

Prof. Hilz is interested in peripheral and central autonomic nervous system disorders, particularly Hereditary Sensory and Autonomic Neuropathies, Fabry disease, TTR-Familial Amyloid Polyneuropathy, central autonomic dysfunction, e.g. in multiple sclerosis, epilepsy, or after traumatic brain injuries and stroke. He is a member of the Brain & Heart Task Force within the World Stroke Organization and particularly interested in autonomic complications of stroke and in their recovery. He mentored more than fifty doctoral students and fellows from many different countries during their stays in his autonomic laboratories in Germany or New

York, and he feels committed to teaching junior colleagues and students about autonomic disorders and diagnostic approaches.

Prof. Hilz received several awards including the Valsalva Award of the Italian Autonomic Society, the Otto-Loewi-Award of the Austrian Autonomic Society, the EFAS-Legend-Award of the European Federation of Autonomic Societies, and an honorary doctorate of the University of Cluj-Napoca.

VOLKER HÖMBERG
GERMANY

Prof. Hömberg had his medical education at the Universities of Düsseldorf, Freiburg and Boston Massachusetts. After spending electives in Neurology at Boston City Hospital and the National Hospital for Nervous Diseases Queens Square London, he was a research fellow at the C. and O. Vogt Institute for Brain Research in Düsseldorf. In 1981 he started a residency in neurology with Prof. Hans Freund at Heinrich Heine University Düsseldorf. In 1987 he was appointed Director of the Neurological Therapy Centre (NTC) a newly founded Institute at Heinrich Heine University in Düsseldorf. He was also founding Director of the NTC in Cologne. He was involved in the setup of many in- and outpatient rehabilitation hospitals in Germany and abroad. In 2001 he started the St. Mauritius Therapy Clinic in Meerbusch near Düsseldorf. From 2011 to February 2022 he was Medical Director and Head of Neurology of the Dept. of Neurology at the Gesundheitszentrum Bad Wimpfen and works as senior neurology advisor for the SRH-Group, one of the biggest hospital groups in Germany.

He was founder, president and vice president of the German Society for Neurorehabilitation for many years. He served as Secretary General for the World Federation of Neurorehabilitation (WFNR), for more than 15 years and was elected President Elect of WFNR in 2020, taking over the presidency in 2022. He is vice president of the European Federation of Neurorehabilitation Societies (EFNR). He received an honorary doctorate from the Medical University of Cluj in 2017. In 2022 he was elected as corresponding member by the Japanese Society of Physical Medicine and Rehabilitation. He is honorary member of the Romanian

Society for Neurorehabilitation, the German Society for Clinical Neurophysiology and Neurorehabilitation and of the Society for Neuroprotection and Neuroplasticity (SSNN).

He is regular reviewer and co-editor of many international peer reviewing journals.

He is regular (co-) programme chairman for neurorehabilitation for major international meetings as the World- and European Neurorehabilitation Congresses (WCNR, ECNR).

He has published more than 250 articles in international peer reviewed journals and many book chapters and books. His primary scientific interest are the fields of motor rehabilitation, cognition, epistemiology, neurological music therapy and pharmacology in neurorehabilitation.

LJUBICA KONSTANTINOVIC

SERBIA

- Date of birth: 29. January 1960.
- Research field and area/areas: Neurorehabilitation, Biomedical Engineering, Pain
- Education: Faculty of Medicine Belgrade, basic studies 1983, medical doctor; Military Medical Academy,1990, specialization Physical medicine and rehabilitation,; Faculty of Medicine University of Belgrade, subspecialization Geriatric medicine, Faculty of Medicine Belgrade, 1990, the M.A. degree in rheumatology field;, PhD thesis in Rehabilitation field, title: "The mechanisms of effects of low power laser of different wavelengths for indirect neurotrauma caused by blast lung injury".
- Dates of appointments: Military Medical Academy, assistant 1993, assistant professor 1997; Faculty of Medicine: Assistant professor elected 2000, reelected 2006, 2010, Associate professor elected 2011, reelected 2016, Full professor of Physical Medicine and rehabilitation 2017. Chief of postgraduate studies of PRM.
- Employment history: Clinic for Rehabilitation Military Medical Academy 1987-

2000; Faculty of Medicine, Clinic for Rehabilitation "dr Miroslav Zotović" 2000 up to the day in the posistion of Assistant Director for Scientific Research and Educational Activities

- Project history: Serbian Ministry of Education, Science and Technology Development, Noninvasive modulation of cortical excitability and plasticity, No 175012/2011; Hybrid Brain Computer Interface for Control of Sensory-Motor Coupling in Post-Stroke Rehabilitation 2020/2022. COST TD 1005, COST CA24123
- Reviewing scientific journals and grants European Journal of Rehabilitation Medicine, Photobiomodulation, photomedicine; Pain Medicine, Gait and posture. Military Medical Review. Editor of the Frontiers in the Medical and Surgical Rehabilitation section.

Publication

- https://scholar.google.com/citations?hl=sr&user=5j2yXQ4AAAAJ&view_op=list_works&sortby=pubdate;
- Ljubica Konstantinovic (0000-0001-5906-1594) - ORCID
- Konstantinović, Ljubica - Author details - Scopus Preview

GERT KWAKKEL
THE NETHERLANDS

Prof. dr. Gert Kwakkel received his chair entitled 'Neurorehabilitation' at the Amsterdam University Medical Centre in 2008. His chair is dedicated to translational research in the field of neurorehabilitation with special focus on the longitudinal relationship between brain plasticity and motor recovery early post stroke. He published more than 325 papers reflecting more than 27.500 citations in the field of neurorehabilitation. Professor Kwakkel is acknowledged as one of the TOP researchers at the VU University in Amsterdam after receiving an advanced ERC laureate together with Professor Dr. van der Helm of the European Commission in 2011. Since June 2015, Gert Kwakkel became visiting professor at the department physical therapy and human movement sciences of the Feinberg School of Medicine at the Northwestern University of Chicago, USA. In 2018, he received an honorary fellowship from the Associated Physiotherapists in Neurology (ACPIN) in

Manchester (UK), the Outstanding Neurorehabilitation Clinician Scientists (ONCS) Award from the American Society of Neurorehabilitation in San Diego (USA). In 2021, he received an honored designation of a classroom that was entitled with his name at the institute Health at the Zürich University of Applied Sciences (ZHAW) in Winterthur in Swiss. Finally, last December, he received the 'Princess Margaret Memorial Award' at the UK Stroke Forum, which is a lifte time achievement for his work in the field of stroke. Since 2010, professor Kwakkel is handling editor of the Stroke Journal and European editor of Neurorehabilitation and Neural Repair.

PETER LACKNER

AUSTRIA

Prof. Dr. Peter Lackner is the head of the Department of Neurology at Klinik Floridsdorf, Vienna Healthcare Group, Vienna, Austria. Prof. Lackner is a trained specialist in neurocritical care and has a long lasting publication record in clinical and experimental research done in the field. Prof. Lackner received his MD in the year 2004 from the Medical University Innsbruck. Prof. Lackner has a strong background in experimental research in Neuroinfectiology, Neurotraumatology and experimental Stroke. His international experience includes research visits at the Bernhard-Nocht Institute for Tropical Medicine in Hamburg, Germany; the University of Witwatersrand, Johannesburg, South Africa and at the Department of Basic Sciences and Physiology, Loma Linda University, California, USA. He was founder and group leader of the research group for Translational Neurocritical Care at the Medical University Innsbruck, Austria. Besides translational research, Prof. Lackner has a primary focus on clinical research in severe neurological illnesses where his main interests are traumatic brain injury and hemorrhagic stroke. He is head of the Karl-Landsteiner Institute of Clinical Research in Acute Neurology. Importantly besides acute care, Prof. Lackner has a special interest in post-acute long-term care after critical neurological insults. In the year 2018, he became head of the Department of Neurology of Klinik Penzing, Vienna that has a focus on early neurorehabilitation as well as long-term neurocognitive rehabilitation in an outpatient setting. Since his call to Vienna, he has been deeply involved in the strategic planning of neurological care in Austria. In the year 2021, he was the medical founder of a new Department of Neurology focusing on acute care in

the newly built Klinik Floridsdorf. He is member of several local and international societies for Neurology, Neurorehabilitation and Neurocritical Care and currently the co-chair of the Austrian Society of Neurorehabilitation.

ANDREAS LUFT
SWITZERLAND

EDUCATION

MEDICAL SCHOOL	Sept. 91 – April 98	Universität of Tübingen, Germany
	May 14, 1998	MD Degree (3. Staatsexamen)
	July 2, 1998	Dr. med. (summa cum laude)
POSTGRADUATE	December 2005	Board Certification in Neurology
	May 2006	Habilitation in Neurology at University of Tübingen, Germany

CURRENT AND PAST POSITIONS

since February 2014	Full Professor (Ordiarius) for Vascular Neurology and Rehabiliation, University of Zürich, Switzerland
since February 2014	Head of the Stroke Center, Department of Neurology, University Hospital Zürich, Switzerland
since February 2014	Chief Medical Officer and President of the Board, cerene Center for Neurology and Rehabilitation, Vitznau, Switzerland
since September 2016	Adjunct Professor at the ETH Zurich
since April 2019	Visiting Professor, Mohammed bin Rashid University, Dubai, UAE
since January 2008	Adjunct Professor, Johns Hopkins University, Baltimore, MD, USA
April 2009 - Dec 2013	Leitender Arzt, Center for Outpatient Rehabilitation, Zürcher Höhenklinik Wald
Juli 06 – Juli 08	H ead of the Neurological Intensive Care and Stroke Unit, University Hospital of Tübingen, Germany
Oct. 04 – Sep. 05	Resident physician, Div. of Geriatric Psychiatry, Dept. of

	Psychiatry, University of Tübingen, Germany
April 01 – June 06	Resident physician, Dept. of Neurology & the Hertie Inst. for Clinical Brain Research, University of Tübingen, Germany
April 99 – March 01	Clinical Fellow, Neurology and Neurocritical Care at the Division of Neurociences Critical Care, Department of Neurology, Johns Hopkins University, Baltimore MD, USA
July 98 – March 99	Clinical Fellow, Neuroendovascular Surgery at Millard Fillmore Hospital, State University of New York at Buffalo, NY, USA

ACTIVE FUNDING

P&K Pühringer Foundation 2/14-1/26, CHF 1'000'000 p.a.
Clinical Research Focus Program (KFSP) - University of Zurich, PI, 1/19 - 12/25, CHF 1'500''000
SimuLOOP, The LOOP Zurich, PI, 9/21 – 9/26, CHF 5'000'000

SUPERVISION OF JUNIOR SCIENTISTS

- PhD students: M. Buitrago (2004), K. Molina-Luna (2007), J. Lam (2013), R. Kundert (2019), M. Widmer (2016), L. Nallet Khosrofian (2019), J. Held (2019), B. Valladeres (2022), A. Schwarz (2021), J. Pohl (2021)
- Dr. med. students: B. Hertler (2012), M. Schubring (2013), S. Röhrich (2010), J. Erharhaghen (2008), S. Mann (2011), S. Heim (2010), J. Schneider (2010), N. Scherrer (2017), P. Baumgartner (2019), R. Steffen (2019)
- Master students: J. Cerny (2010), D. Wirth (2014), C. Gloor (2014), D. Flury (2014), E. Wiedmer (2014), C. Gmür (2015), M. Kälin (2015), S. Andres (2017), A. Kägi (2017), J. Probst (2016), D. Neziri (2020), A. Husain (2020)
- Post-Docs: T. Ringer (2004), Ana Pekanovic (2009), Jonas Hosp (2016), S. Schwarz (2011), T. Kaffenberger (2014), J. Schneider (2013), M. Branscheidt, Janne Veerbeek, Jeremia Held
- Habilitations: S. Wegener (2015), C. Globas (2016), E. Huberle (2020), P. Gruber (2020)

TEACHING

Lectures in Clinical Neurology, Neuroscience and Rehabilitation for medical students, neuroscience/biology students, engineering students (ETH).

HONORS AND AWARDS

2010	Susanne Klein Vogelbach Prize for Rehabilitation Research (SFr. 10'000)
2006	Alois Kornmüller Award of the German Society for Clinical Neurophysiology (€ 2'500)
2005	Research Price of the Commerzbank Foundation (€ 5'000)

2005 Attempto Prize of the University of Tübingen (€ 7'500)
2004 Poster Prize of the German Soc. for Neurology (DGN)
2003 Poster Prize of the German Soc. for Neurology (DGN)
1991 Award of the Bavarian Scholarship Foundation (€ 1'500)
1990 Award in the German Scholar Contest in Computer Science

SCIENTIFIC ACHIEVEMENTS AND COLLABORATION

BASIC SCIENCE

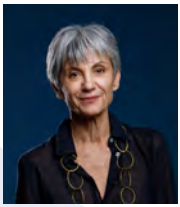
Dopaminergic control of motor skill learning in the rat: The major focus of our basic research group has been the dopaminergic projection to motor cortex in the rat and its role for skill learning. We described the anatomy (Hosp, J Neurosci 2011), behavioral relevance (Molina-Luna, PlosOne 2010), electrophysiology (Hosp, Neuroscience 2009, Hosp Neuroimage 2010, Molina-Luna Neuroimage 2008) and cellular biology (Rioult-Pedotti, PlosOne 2015) of dopaminergic innervation of motor cortex in the rat. We are currently investigating the role of the dopaminergic system in post-stroke recovery and its functioning in vivo using a combination of electrophysiological, optogenetic and behavioral methods. Collaboration with Brown University, USA; laboratories of Martin Schwab and Adriano Aguzzi, UZH

CLINICAL SCIENCE

Clinical trials in Stroke Rehabilitation are our major clinical research focus. During my post-doctoral fellowship at the Johns Hopkins University I started clinical research in stroke rehabilitation. Together with partners from the University of Maryland I conducted two clinical trial programs investigating bilateral arm therapy and treadmill exercise in chronically disabled stroke survivors. I myself performed functional imaging studies as part of these controlled trials (JAMA 2004, Stroke 2008, Neurorehabil Neural Repair 2011, BMC Neurology 2014). The first trial that I designed and sponsored myself was an RCT on treadmill exercise in elderly stroke subjects (Neurorehabil Neural Repair 2012). After moving to Zurich, I participated in design and recruitment of the Armin Trial to investigate the efficacy of robotic training for arm recovery (Klammroth, Lancet Neurol 2014). My group is currently conducting (with myself as PI and Sponsor Investigator, respectively) two RCTs in acute stroke recovery: One multicenter trial together with Johns Hopkins and Columbia University on robotic training during the subacute phase after stroke (SMARTS 2). The second is a multicenter trial (different rehabilitation centers in Switzerland) investigating the role of added feedback and reward to arm training (Armeo Senso Reward). My group also completed several non-randomized clinical trials including studies with telerehabilitation arm therapy (e.g., Wittmann, J Neuroeng Rehabil 2016). Close collaboration exists with the laboratories of Roger Gassert and Robert Riener at ETH Zurich.

Together with Christian Baumann and Reto Huber we conducted a controlled

trial investigating the effects of sleep modulation by music on arm rehabilitation outcomes.
In collaboration with the Departments of Neurosurgery and Neuroradiology, we are currently running an observational trial funded by the Clinical Research Priority Program of the UZH to investigate the interplay between brain perfusion and plasticity after stroke (CRPP stroke).



PAOLA MARANGOLO
ITALY

Paola Marangolo is a Neuropsychologist, Full Professor in Neuropsychology and Cognitive Neuroscience at the Department of Humanities Studies, University Federico II, Naples, Italy. Her research interests lie primarily in cognitive neurorehabilitation. Most of her research is concerned with the study of cognitive disorders, in particular, acquired language deficits in brain-injured adults using interdisciplinary techniques aimed at identifying the neural processing streams which support cognitive recovery and new rehabilitation techniques. Her current research brings together neuropsychological, neuroimaging and neuromodulation approaches to investigate the interaction between language and other cognitive domains from a network perspective. She is author of several articles published in indexed, peer reviewed scientific journals and of several book chapters focused on the diagnosis and rehabilitation of aphasia.

ERRIKOS MASLIAS
SWITZERLAND

Medical Doctor (MD) and Clinical Study Investigator

Dr. Errikos Maslias completed his medical degree (MD) at the Free University of Brussels (ULB) and the Aristotle University of Thessaloniki (AUTh) in 2019. In the same year, he began his residency in Neurology at Lausanne University Hospital (CHUV), where he gained expertise in stroke, movement disorders, and acute neurorehabilitation. He was subsequently promoted to Chef de Clinique in the Acute Neurorehabilitation Unit at CHUV, where he has been actively involved in both clinical and research work focusing on the intensification of acute neurorehabilitation and the study of disorders of consciousness in patients with brain injury.

In 2023, he joined the NeuroDigital@NeuroTech group and the Laboratory of Acute Neurorehabilitation (LNRA) as a clinical study investigator to further pursue his academic career. His current research focuses on the use of digital health technologies to develop seizure detection algorithms, on the diagnosis and early neuroprognostication of disorders of consciousness (DoC), and on the precise neurorehabilitation and neuroprognostication of patients with brain injuries using novel brain connectivity approaches and large language models (LLMs).

DAFIN F. MUREȘANU
ROMANIA

Professor of Neurology, Senior Neurologist, Chairman of the Neurosciences Department, Faculty of Medicine, Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca, President of the European Federation of Neurorehabilitation Societies (EFNR), EAN Neurotraumatology Scientific Panel Management Group Member, Past President of the Romanian Society of Neurology, President of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN), Chairman "RoNeuro" Institute for Neurological Research and Diagnostic, Corresponding Member of the Romanian Academy, Member of the Academy of Medical Sciences, Romania and secretary of its Cluj Branch. He is member of 17 scientific international societies (being Member of the American Neurological Association (ANA) - Fellow of ANA (FANA) since 2012) and 10 national ones, being part of the executive board of most of these societies. Professor Dafin F. Muresanu is also a specialist in Leadership and Management of Research and Health Care Systems (specialization in "Management and Leadership, Arthur Anderson Institute, Illinois, USA, 1998"; "MBA – Master of Business Administration - Health Care Systems Management, The Danube University - Krems, Austria, 2003"). He has performed valuable scientific research in high interest fields such as: neurobiology of central nervous system (CNS) lesion mechanisms; neurobiology of neuroprotection and neuroregeneration of CNS; the role of the Blood-brain barrier (BBB) in CNS diseases; developing comorbidities in animal models to be used in testing therapeutic paradigms; nanoparticles neurotoxicity upon CNS; the role of nanoparticles in enhancing the transportation of pharmacological therapeutic agents through the BBB; cerebral vascular diseases; neurodegenerative pathology; traumatic brain injury; neurorehabilitation of the central and peripheral nervous system; clarifying and thoroughgoing study on the classic concepts of Neurotrophicity, Neuroprotection, Neuroplasticity and Neurogenesis by bringing up the Endogenous Defense Activity (EDA) concept, as a continuous nonlinear process, that integrates the four aforementioned concepts, in a biological inseparable manner.

KRISTINA MÜLLER
GERMANY

May 1984: Final Medical Degree (Bonn University)
since July 1984: Training in General Pediatrics in the Department of Pediatrics at the „Heinrich-Heine"-Universität Düsseldorf, Specialization in Pediatric Neurology (Prof. H.-G. Lenard)
August 1985: Medical Thesis at „Rheinischen Friedrich-Wilhelm" University in Bonn
Jan. 1989-Dec. 1990: Research Project about "Motor development in children" sponsored by the Ministry of Research and Technology of Germany.
November 1991: Board Qualification in Pediatrics
January 1992: Senior Registrar at the Department of Pediatrics of the „Heinrich-Heine"-Universität, Düsseldorf
Oct. 92- April 1993: Fellowship at the Hospital for Sick Children , Department of Neuropaediatrics (Prof. B. Neville), Great Ormond Street, London
February 1993: Habilitation, Academic Lecturer in Pediatrics
since May 1993 Consultant at the Department of Pediatrics at the „Heinrich-Heine-Universität" Düsseldorf
Feb.-Dec 99 Research Project: Locomotion in Children with mit Cerebral Palsy
March-June 2000 Work at the Rehabilitation Institute of Chicago (Chicago, USA) on special aspects of neuro-rehabilitation for children
Oct 2000-Dec 2024: Head of Neurorehabilitation for Children and Adolescents, St Mauritius Therapy Clinic in Meerbusch, (Teaching Hospital of the University of Düsseldorf)
Since October 2025: Research Assistant, Section and Chair Clinical Science of Cognition Prof. F. Binkofski, RWTH Aachen

Since 2006 Assessor Neuropediatrics at the Nordrhein Medical Association
March 2007 Additional designation for the field of Rehabilitation
Since January 2018 Member of the ethical committee for preimplantation diagnostics (PID) at the Nordrhein Medical Association
January 2018-June 2023 Partner in the Interreg NWEurope Research project VR4Rehab https://www.nweurope.eu/projects/project-search/vr4rehab-virtual-reality-for-rehabilitation)

March 2020-2024 Partner in the Horizon 2020 EU project Multitouch (multimodal haptic with touch devices)
https://cordis.europa.eu/project/id/860114/de
Since summer 2023 Part of the Interreg NWEurope project Scale-up 4Rehab:
https://scale-up4rehab.nweurope.eu/
Member of the Executive Committee of the XR4REHAB Collaboration & Innovation Network: for details see
https://vr4rehab.org/

MAYOWA OWOLABI

NIGERIA

Mayowa Owolabi is director, Center for Genomic and Precision Medicine, University of Ibadan, Nigeria, and a fellow of the American Neurological Association, the American Heart Association, the American Academy of Neurology, the African Academy of Sciences and the World Academy of Sciences. He is Academy Secretary, Academy of Medical Sciences. He is a member, WHO Technical Advisory Group on NCD and the African Regional Director, World Hypertension League and pioneer Chair, Scientific Committee, Nigeria Genomics Consortium. He is a global leader in brain health, with over 490 publications, over 219,000 citations, and a Google Scholar h-index of 112. Widely recognized for his contributions to neuroscience, he proposed the "brain quadrangle", which has shaped novel approaches for brain health. Ranked among the top 2% of scientists globally (2025), he is the most highly cited Nigerian in Scival 2021 to 2025. He was the recipient of the 2021 World Stroke Organization Global Award for Outstanding Contributions to Clinical Stroke Research. He is the pioneering Regional Vice President (Sub-Saharan Africa) World Federation for NeuroRehabilitation, a member of the Presidium, World Federation for NeuroRehabilitation and a member of the WHO's Strategic and Technical Advisory Group on Mental Health, Brain Health and Substance Use (STAG-MNS) He chairs The Lancet Commission on Neurorehabilitation currently developing pragmatic solutions to improve the quality of life of over 3.4 billion people with neurological conditions globally.

CATERINA PISTARINI
ITALY

- WFNR member of Board
- Director of Scientific Rehabilitation Institute Salvatore Maugeri Genoa-Italy
- Neurorehabilitation Department of Salvatore Maugeri Clinical and Research Intitutes -Italy
- Professor of Physical and Rehab Discipline University of Genoa - Italy
- Professor of Occupational Therapy School University of Pavia – Italy
- Past General Secretary of WFNR
- Chair of WFNR SIG on Mild and Severe Brain Injury
- Past President of Italian Society of Neurorehabilitation(SIRN) ,
- Presidium Member of European Society of Neurorehabilitation (EFNR)

THOMAS PLATZ
GERMANY

Thomas Platz was educated at the medical school in Heidelberg/Mannheim, Germany, and in 1988 at the Duke University Medical Center, Durham, NC, USA. Dr.med. degree in 1990. He started his residency in neurology in Berlin, Germany, in 1989. In 1995, he received the Feodor-Lynen Fellowship (AvH foundation) and stayed at the Institute of Neurology, Queen Square, London, UK. In 1997, he received the Dipl. in epidem. and biostats from the McGill University, Montreal, QC, Canada, and became Neurologist and Clinical Geriatrist Consultant in Berlin, Germany. In 2002, Habilitation degree in neurorehabilitation at the Charite Berlin, Germany. In 2006, he became the Head of the Department of Neurohabilitation at the BDH Klinik Greifswald, Germany. Since 2009, he had been acting as a Medical Director of that hospital and as Head of the Department of both the Neurorehabilitation

Centre there and the Spinal Cord Injury Unit, and received a personal professorship for neurorehabilitation at the University Greifswald; since 10.2018 he acts as Medical Director Research at the BDH Klinik Greifswald and Head, Institute for Neurorehabilitation and Evidence-based Practice ("An-Institut"), University of Greifswald; in addition, he leads the neurorehabilitation research group at the Universitätsmedizin Greifswald. Among other activities he is Regional Vice President Central and Western Europe, head of the Education Committee and the Special Interest Group Clinical Pathways of the World Federation for NeuroRehabilitation, WFNR; in addition, he is liaison person for the WFNR-Cochrane Rehabilitation collaboration. He is Past-President of the German society for neurorehabilitation (DGNR), and head of its Practice Guideline and Research Committees. Since 2024 he is acting as co-chair for the Lancet Commission on Neurorehabilitation.

ALES PRAZNIKAR
SLOVENIA

Dr Aleš Pražnikar, MSc, graduated from the University of Ljubljana in 1993, and holds licenses in clinical neurology and physical and rehabilitation medicine. His first employment was at University Rehabilitation Institute, then moved to University Medical Centre Ljubljana in 2006 to help organise Neurorehabilitation Services. Dr. Pražnikar received additional training at university hospitals in Hartford, USA; Maastricht, Netherlands; Burgau, Germany; and Paris, France. In 2018 he was invited to take the Consultant post at the Institute for Neurological Sciences, Queen Elisabeth University Hospital, Glasgow, UK. In the same year, he had become the Clinical Lead of the Neurorehabilitation Unit / Rehabilitation Regional lead for West of Scotland, and lecturer at the Glasgow University. In 2022 he moved to Murdostoun Brain Injury Rehabilitation Centre as a medical director, he continues to work with his previous team as locum consultant. He has been active in lecturing, mentoring and researching/publishing in the fields of early neurorehabilitation, neuropathic pain, spasticity, disorders in consciousness and neuromuscular disorders. Dr Pražnikar is a past director of the International Alliance for ALS/MND and is currently heading the Medical Council of the Slovenian Muscular Dystrophy Association. He also holds diploma in oenology. He is married and father of three daughters.

MELVYN ROERDINK
THE NETHERLANDS

Melvyn Roerdink is an academic visionary, innovator and entrepreneur generating -with brilliant academic and industry teams- knowledge and solutions for scientific and clinical needs in the medtech domain. Melvyn and his teams worked on conceptual and technological solutions in the context of rehabilitation and falls prevention to better understand, evaluate and improve (limitations in) walking. He is associate professor Technology in Motion at the Department of Human Movement Sciences of Vrije Universiteit Amsterdam, where he did his PhD project, culminating in the invention of the world's first augmented-reality rehabilitation treadmill C-Mill (commercialized through DIH/Hocoma/Motek, for which he serves as scientific advisory board member). He has experienced firsthand that real-world impact requires collaboration with societal, clinical and industry parties. As senior researcher at the department of Nutrition and Movement Sciences of Maastricht University he is primarily responsible for leading a team working on projects NavigAIt (i.e., development and clinical validation of an intelligent augmented-reality cueing solution that understands users in their environments through computer vision and data science) and FallAR (development and validation of fall-risk assessment and treatment with AR), both in collaboration with Strolll, for which he serves as Chief Scientific Officer. He plays a pivotal role on the Strolll executive team, architecting and executing the global scientific strategy that cements Strolll's position as the AR industry leader in neurorehabilitation. He helped translate scientific insights into impactful AR rehabilitation and assessment solutions that are clinically validated and scientifically credible. His motto is to prevent that innovation is just expensive research. After all: ideas are easy, but execution is everything, requiring public-private partnership teams to make things happen.

GIORGIO SANDRINI
ITALY

Giorgio Sandrini was Full Professor of Neurology in the University of Pavia, Pavia,Italy and Chairman of the Department of Neurology and Neurorehabilitation at the Institute of Neurology, "C. Mondino" Foundation,Pavia until 1st October 2018. He was President of CIRNA Filantropic Foundation until 2023.He is Specialty Editor-in-chief of Frontiers in Neurology, Neurorehabilitation.

The main fields of his research are neurorehabilitation,headache and neurophysiology of pain.He published more than 300 articles concerning these topics.He promoted several national and international Congresses and Courses.
He was President of the EFNR and President of the Italian Society of Neurorehabilitation (SIRN). He was Chairman of European Committee on Curriculum in Neurorehabilitation.

He is Co-chairman of WFNR SIG on Neurophilosophy and Neuroethics.
He was Director of University Centre for Adaptive Disorders and Headache (UCADH) and Co-Chairman of the EFNS Task Force on Neurophysiological Tests and Neuroimaging Procedures in Non-acute Headache.

SIGRID SCHWARZ
AUSTRIA

1995-2000	Senior Neurologist at the Neurological Clinic Maria Gugging
2000-2010	Senior Neurologist at the Neurological Rehabilitation Clinic Pirawarth
2011 – 2023	Senior Neurologist at the University Clinic of Tulln Responsibility: Stationary Early Neurorehabilitation and

	Neurorehabilitative Day-Clinic
2000 –2024	Management of regional self-help-groups for Stroke Survivors
2020 –2024	Cooperation with SAFE and SAP-E (Stroke Action Plan for Europe 2030)

PRESENT:
Senior consultant at the Neurological Department /University Clinic Tulln
Accreditation as FEES-Instructor (DDG, ESSD)
Establisher and Tutor of FEES - courses in Austria
Host Lecturer at the Danube University Krems (Early Neurorehabilitation)

2012 Professional Diploma in Hypnosis
2015 Accreditation in Geriatric and Palliative Medicine

LUCA SEBASTIANELLI
ITALY

Dr. Luca Sebastianelli is Director of the Neurorehabilitation Unit at Vipiteno/Sterzing Hospital (Italy) and Co-Chair of the EAN Scientific Panel on Neurotraumatology. His clinical and research activities focus on traumatic brain injury, disorders of consciousness, and post-stroke neurorehabilitation, with a particular interest in neurophysiological biomarkers and outcome prediction.

EMMA SEGURA
SPAIN

Emma Segura is a postdoctoral researcher at the Cognition and Brain Plasticity Unit of the Bellvitge Biomedical Research Institute (Barcelona, Spain). Her work focuses on developing and evaluating music-based interventions for the rehabilitation of various clinical populations, and on how music production and psychological conditions affect brain function. She holds a PhD in Music-supported Therapy and motivational factors in chronic stroke rehabilitation, where she studied the intervention effectiveness and the presence of anhedonia in this population. She has also contributed to research on anhedonia in endometriosis, music therapy for chronic pain, and natural singing reward. Currently, she coordinates a clinical trial belonging to a Horizon Europe project on music therapy for individuals with substance use disorder, contributing to the design of music therapy sessions and the preparation and analysis of behavioural and neuroimaging assessments.

NICOLE VON STEINBÜCHEL
GERMANY

Academic positions

since 2023	Adjunct professorship at the University of Innsbruck
2005-2023	Director of the Institute for Medical Psychology and Medical Sociology, University Medical Center Göttingen
2004-2005	Director of the Institute for Medical Psychology, University Medicine Göttingen
2005-2006	Professeur suppléante at the Université de Genève, Départment de l'instruction publique, Geneva, Switzerland
2001-2004	Head of the Department of Neurogerontopsychology, Gerontopsyα chiatrie, Belleldée University Hospital, Geneva, Switzerland

2001-2004 Professeur associé at the Université de Genève, Département de l'instruction publique, Geneva, Switzerland
1999-2000 Dorothea Erxleben research professorship, Magdeburg
1993-1998 C-3 Professorship in Medical Psychology, LMU, Munich

Member of numerous scientific societies, awarded with multiple prices and national, European and international scientific grants.

ȘTEFAN STRILCIUC
ROMANIA

Dr. Ștefan Strilciuc is the Director of the Department of Genomics at Iuliu Hațieganu University of Medicine and Pharmacy. He works at the intersection of public health and medicine, focusing on stroke care across the translational sciences continuum. He has contributed to over 50 clinical trials and health economic studies and has held various research, advisory and management roles in government and industry at all levels. As a member of the Romanian Health Observatory, he has helped design and disseminate advocacy initiatives, influencing policy and healthcare management across the European Union.

MICHAEL THAUT
CANADA

Dr. Michael H. Thaut, PhD, is currently a Professor of Music with cross-appointments in the Faculty of Medicine [Rehabilitation Science, Medical Science, Neuroscience] at the University of Toronto. He also holds appointments at 2 University Teaching Hospitals as Collaborator Scientist at the CAMH Hospital Neuroimaging Division and the Li Ka Shing Knowledge Institute at St. Michael' Hospital, Toronto. He is Director of the University's Music and Health Science Research Center (MAHRC) and associated graduate programs in Music and Health Science [MHS]. His position is endowed by a TIER I CANADA RESEARCH CHAIR IN MUSIC, NEUROSCIENCE, AND HEALTH awarded from the Federal Government of Canada in 2017 and recently renewed until 2031.

Dr. Thaut received his Master's and PhD in Music from Michigan State University, with a cognate minor in movement science. He holds a special diploma in music from the Mozarteum University in Salzburg/Austria and a German Diplom in Psychology/Education from the University of Muenster. Prior to his appointment at the University of Toronto, he was a Professor of Music and Professor of Neuroscience as well as Director of the Center for Biomedical Research in Music at Colorado State University where he also served as Director of the School of the Arts from 2001-2009. He has held many visiting professorships internationally including at the University of Michigan Dept. of Movement Science, Düsseldorf University Medical School, National Institute for Neuroscience Research IRCCS Santa Lucia/ Rome, Heidelberg University of Applied Sciences, and Kurashiki Sakuyo Music University in Japan to name a few.

Dr. Thaut is an international leader in the basic and clinical auditory and music neuroscience and has generated internationally recognized pathbreaking research for music and rhythm based interventions in brain rehabilitation. He has over 300 scientific publications and is the co-editor of the Oxford Handbook of Music Psychology, senior editor of the Oxford Handbook of Music and the Brain and the Oxford Handbook of Neurologic Music Therapy which was second in the annual British Medical Association book award in the category "Best New Book in Neurology 2015". He is President Emeritus of the International Society for Clinical Neuromusicology, Presidium Member of the World Federation of Neurorehabilitation, Vice President

of the International Society for Music and Medicine, , an Overseas Fellow of the Royal Society of Medicine/ UK, and Board Co-Chair of the International Academy of Neurologic Music Therapy.

His research team in collaboration with medical science and clinician groups worldwide developed the field of Neurological Music Therapy, which is a medically recognized evidence based system of music-rhythm based interventions in motor, speech/language, and cognitive rehabilitation applied to a broad range of neurologic disorders, practiced by certified clinicians in over 70 countries worldwide, and endorsed by the World Federation of Neurorehabilitation.

As a former professional violinist in the classic and folk genre, Dr. Thaut has recorded several LPs/CDs and has toured extensively throughout Europe and the US.

ȘERBAN TURLIUC

ROMANIA

Assoc. Prof. Dr. Șerban Turliuc is a senior psychiatrist and academic at the "Grigore T. Popa" University of Medicine and Pharmacy in Iași, Romania, where he serves in the Department of Psychiatry. He is also a leading clinician at the "Socola" Institute of Psychiatry, one of the largest and most reputable psychiatric hospitals in Eastern Europe.

Dr. Turliuc graduated from UMF Iași, where he also obtained his PhD in Medical Sciences. With over two decades of clinical and academic experience, he has contributed significantly to psychiatric education, mentoring generations of medical students and residents, including those enrolled in the English-language program. He is the author and co-author of numerous scientific papers and book chapters in psychiatry and neuroscience, with recent research interests focusing on mental health systems, neurocognitive mechanisms, and the interaction between the human brain and artificial intelligence.

Dr. Turliuc has served in various leadership roles within the Socola Institute and continues to be actively involved in national and international conferences.

His clinical expertise, academic commitment, and openness to interdisciplinary perspectives make him a respected voice in contemporary psychiatry.

JOHANNES VESTER
GERMANY

Professor Johannes Vester has served as the President of the Academy for Multidisciplinary Neurotraumatology (AMN) since 2018. He has been the Head of Biometry & Clinical Research at the Institute for Data Analysis and Study Planning (IDV) in Germany since 2018 and Invited Associate Professor at the Department of Neurosciences at Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania, a position he has held since 2017.

With a background in medicine, Professor Vester researched pattern recognition in the visual brain and developed a pharmacodynamic Neuron Simulation Model at the Institute for Medical Documentation and Statistics (University of Cologne). He has conducted over 100 training courses on biometry for clinical research professionals and taught at various universities and international institutions. Throughout his career, Professor Vester has planned and evaluated around 150 randomized clinical studies worldwide.

He is a member of several international Advisory Boards and Steering Committees and has contributed as a biometric expert in regulatory authority panels, including hearings with the United States Food and Drug Administration (FDA), the European Medicines Agency (EMA), and Germany's Federal Institute for Drugs and Medical Devices (BfArM). He is also involved in workshops for the International Biometric Society (IBS) and serves as a statistical peer review member for leading medical journals.

Professor Johannes Vester holds key roles in several organizations, including serving as the Statistical Expert and Elected Member of the International Scientific Committee for the Society for the Study of Neuroprotection and Neuroplasticity (SSNN) and Co-Chair of the EAN Guideline Task Force on Neurorehabilitation.

PAUL VERSCHURE
THE NETHERLANDS

Dr. Paul F.M.J. Verschure is the Universidad Miguel Hernandez de Elche Distinguished Professor affiliated with the CSIC Alicante Institute of Neuroscience and Department of Health Psychology. Paul has received his MA and Ph.D. in Psychology and pursued his research at different leading international institutes, including The Neurosciences Institute and The Salk Institute, both in San Diego, the Univ. of Amsterdam, Univ. of Zurich, the Swiss Federal Institute of Technology-ETH, University Pompeu Fabra in Barcelona and Radboud Universiteit.

Paul has developed a unified theory of mind and brain, Distributed Adaptive Control (DAC), which he validates using empirical and synthetic methods. His research spans Neuroscience, Neurotechnology, Cognitive Science, Robotics, Artificial Intelligence, Virtual/Augmented-Mixed Reality. DAC has been applied to various technologies that support and advance the human condition in the areas of Digital Brain Health, Education, and Cultural Heritage.

Paul founded the SPECS research group in 1996, which comprises a multidisciplinary team of doctoral and post-doctoral researchers, including psychologists, engineers, and biologists. Paul has started several spin-off companies, Eodyne Systems and Sapiens5, and chairs the Future Memory Foundation and the Convergent Science Network.

PIETER VOS
THE NETHERLANDS

Pieter Vos is neurologist at the department of Neurology(until 2025), Slingeland Hospital in Doetinchem The Netherlands. Research interest focusses on traumatic brain injury. Between 1998-2012 I was working at the department of Neurology Radboud University Medical Centre. Focus of the research activities was and is to unravel the clinical, biochemical and genetic determinants of neuroplasticity and recovery after mild, moderate and severe traumatic brain injury. These days patient centered activities relate to the care and cure processes in clinical neurology. Member of the Dutch Society for Neurology and the management group of the scientist panel on neurotraumatology of the European Academy of Neurology(until 2026). Co chair of the Task Force Mild Traumatic Brain Injury of the European Academy of Neurology.

EDITORIAL AND SCIENTIFIC BOARDS

2025-	Co-chair Task Force EAN Guideline on mild Traumatic Brain Injury
2024-2026	Co-chair scientific panel Neurotraumatology EAN
2017-2024	Member European Academy of Neurology scientific panel Neurotraumatology
2016	Member expert panel 5(th) international conference on concussion in sport Berlin,10-2016.
2015	Co-editor book Traumatic Brain Injury (with prof. R. Diaz Arrastia).
2010-2011	Member EFNS Costs of Brain Disorders study group European Brain Council
2010-2015	Head steering committee Ever Neuro Pharma Asian-Pacific trial in TBI
2010-2019	Member editorial board European Journal of Neurology
2007	Member CBO Guideline Neuropsychiatry in aquired brain damage
2006-2017	Chair EFNS panel Neurotraumatology
2006	Expertpanel Neurotraumatology, Dutch Hersenstichting
2003, 2018	Member CBO Dutch Guideline Acute traumatic spinal cord injury
1999	Chair EFNS Task Force mild traumatic brain injury

MANAGEMENT

Chair Department of Neurology(2015-2017), Member calamities committee(2015-),

Member advisory board New Hospital (2015-2021), Internal auditor(2015-2021), IFMS appraiser(2014-2022) Slingeland hospital.
Member subcommittee Dutch Society of Neurology Site visits of neurological boards(2014-2023)
Member scientific board Ever Neuro Pharma Asian-Pacific trial in TBI(2011 -2014).
Principal Investigator for POCON: A multicentre cohort study in moderate/severe TBI (2007-2012).

REVIEWER AND RAPPORTEUR
2000-2024:Reviewer for J Neurotrauma, J Neurol Neurosurg Psych, Neurology, Neurosurgery, NTvG, Stroke, Shock, Eur J Neurology, Nature Medicine, J Cell Molec Med, J Molec Diagn Therapy, PloS-One, Critical Care, Clin Chem& Lab Medicine, Eur J Neurosci, Acta Hematol, J Nucl Med, Acta Neurol Scand, Human Brain Mapping, Scientific Reports.

SABAHAT WASTI
UNITED ARAB EMIRATES

Dr Sabahat Wasti received Bachelors degree in Medicine and Surgery from Khyber Medical College Peshawar, Pakistan. He moved to the United Kingdom for postgraduate studies in 1984. He obtained MRCPI from Royal College of Ireland and then completed Rehabilitation Medicine training at Leeds Teaching Hospital, UJK He became a Consultant in RM in Sheffield Teaching Hospitals UK in 1998. In 2007 he was appointed as Senior Consultant Post in Physical Medicine and Rehabilitation at Sheikh Khalifa Medical City, Abu Dhabi. He established the first PM&R Department in SKMC. He has served in both the public and private sectors in the UAE and spearheaded the development of rehabilitation services in both sectors. Currently, he serves as Director and Staff Physician, Neurorehabilitation in Neurological Institute, Cleveland Clinic Abu Dhabi.

Dr Wasti is experienced Neuro Rehabilitation physician with experience of rehabilitating patients with variety of neurological conditions. Dr Wasti has special interest in early rehabilitation after stroke.

Dr Wasti is well known, internationally. He holds several positions including Gulf Area Vice President World Federation for Neurorehabilitation (WFNR), Adjuvant Member, WFNR Presidium, Flying Faculty Member and Mentor for WFNR. He is widely invited to conferences as Guest Speaker. He has several publications to his name, including book chapters.

STEVEN ZEILER

USA

Dr. Steven Zeiler cares for patients with stroke. He received his medical and Doctor of Philosophy degrees from the University of Colorado. He completed a one-year internal medicine internship at the University of Colorado prior to coming to Johns Hopkins for his residency training in Neurology and fellowship training in Vascular Neurology. As a stroke provider, Dr. Zeiler has first-hand knowledge of stroke, stroke treatment, and stroke recovery, all of which shape his research. Dr. Zeiler's laboratory uses cutting-edge molecular, genetic, and behavioral techniques in animals with translational investigations in humans. Working in collaboration with neuroscientists, engineers, computer programmers, and therapists, Dr. Zeiler has developed digital monitoring and digital therapeutic solutions for patients with stroke; Dr. Zeiler directs SENRG: Super Room for Enriched Neurological Repair at Green Spring.

International School of Neurology

FOUNDATION OF THE SOCIETY FOR THE STUDY OF NEUROPROTECTION AND NEUROPLASTICITY

fsnn

EFNR The European Federation of NeuroRehabilitation Societies

WFNR World Federation for Neurorehabilitation

RoNEURO "RoNeuro" Institute for Neurological Research and Diagnostic

FUNDATIA JURNALULUI Journal of Medicine and Life

UMF UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE IULIU HAȚIEGANU CLUJ-NAPOCA

AMN ACADEMY FOR MULTIDISCIPLINARY NEUROTRAUMATOLOGY

21ST INTERNATIONAL SUMMER SCHOOL OF NEUROLOGY

3-5 SEPTEMBER 2026 | EUROPA HOTEL | EFORIE NORD | ROMANIA

WWW.SSNN.RO

HYBRID EVENT

GENERAL INFORMATION

GENERAL INFORMATION

ADMINISTRATIVE OFFICE

EFNR The European Federation of NeuroRehabilitation Societies

European Federation of Neurorehabilitation Societies (EFNR)
Executive Director: Cristian Andriescu
office@efnr.org

LOGISTIC PARTNERS

GTM

21 Rapsodiei Street,
Ap 15, Cluj Napoca,
Romania
tel.: +40364137103
office@global-t.ro

SYNAPSE TRAVEL

37 Calea Motilor, Ap 6
Cluj Napoca, Romania
office@synapsetravel.ro
synapsetravel.ro

Scientific Secretariat

Foundation for the Society for the Study of Neuroprotection and Neuroplasticity
37 Mircea Eliade Street, 400364,
Cluj-Napoca, România
Mr. Cristian Andriescu: +40746585216
E-mail: cristian.andriescu@ssnn.ro

Contact

Mrs. Doria Constantinescu
mobile: +40757096111
doria@synapsetravel.ro

LANGUAGE

The official language is English. Simultaneous translation will not be provided.

CHANGES IN PROGRAM

The organizers cannot assume liability for any changes in the program due to external or unforeseen circumstances.

FINAL PROGRAM & ABSTRACT BOOK

Available online on efnr.org

TIME

The program hours are adjusted to Current Local Time in Spain is CEST (UTC+2)

ORGANIZERS

European Federation of
NeuroRehabilitation Societies
www.efnr.org

World Federation for
NeuroRehabilitation
www.wfnr.co.uk

Foundation of the Society for
the Study of Neuroprotection
and Neuroplasticity
www.ssnn.ro

Institute for Neurological
Research and Diagnostic
www.roneuro.ro

Foundation of the Journal
for Medicine and Life
www.medandlife.org

Academy for Multidisciplinary
Neurotraumatology
www.brain-amn.org

PARTENERS

EB NEURO

Restoring quality of life

RGS ecosystem

Data Driven Rehabilitation

www.efnr.org