

Dimensions of Motor Control

Sport, Health, Development, Robotics

WEDNESDAY

10:00 – 11:20

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ROOM: HS3 - SYMPOSIUM *IMAGERY I* - CHAIR: MARTIN LOTZE

“MOTOR IMAGERY TRAINING AND ITS NEUROFUNCTIONAL MECHANISMS”

ROOM: HS4 - SYMPOSIUM *MOTOR LEARNING* - CHAIRS: PHILIPP WANNER & SIMON STEIB

“THE ROLE OF EXERCISE IN ENHANCING MOTOR LEARNING IN AGING AND NEUROREHABILITATION: INSIGHTS INTO MECHANISMS AND APPLICATIONS”

ROOM: SE5 - SYMPOSIUM *MANUAL DEXTERITY* - CHAIR: PÅVEL LINDBERG

“MANUAL DEXTERITY TECHNOLOGIES – FROM MUSICAL AND MARTIAL ARTS EXPERTISE TO POST-STROKE REHABILITATION”

11:30 – 12:50

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ROOM: HS3 SYMPOSIUM *IMAGERY II* - CHAIRS: CORNELIA FRANK & ANDREA POLZIEN

“MECHANISMS OF IMAGERY AND IMAGERY TRAINING”

ROOM: HS4 SYMPOSIUM *PA & AGEING I* - CHAIR: KERSTIN WITTE

„INTERVENTIONSEFFEKTE BEI ÄLTEREN ERWACHSENEN“

ROOM: SE5 FREE SESSION *LEARNING* - CHAIR: STEFAN PANZER & MATTHIAS WEIGELT

13:15 – 13:30 OPENING (HS 1)

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13:30 – 15:00 KEYNOTE: DEVELOPMENT – CHAIR: WALTRAUD STADLER (HS 1)

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15:30 – 16:50

7 - 8

ROOM: HS1 SYMPOSIUM *PA & AGEING II* - CHAIR: MARCO TAUBERT

“BALANCE TRAINING IN HEALTHY OLDER INDIVIDUALS: EFFECTS ON BRAIN AND BEHAVIOR”

ROOM: HS3 SYMPOSIUM *SENSORIMOTOR PREDICTIONS* - CHAIRS: STEPHAN ZAHNO & LISA MAURER

„SENSORIMOTOR PREDICITONS“

ROOM: HS4 FREE SESSION *AGEING & BRAIN HEALTH* – CHAIR: BETTINA WOLLESEN, CARMEN KREWER

17:00 – 18:30 PANEL BOARD MEETING (HS 1)

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18:30 WELCOME RECEPTION (HS 1)

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THURSDAY

08:30 – 09:30 **9**

ROOM: HS1 SYMPOSIUM *COMPETITIVE SPORT* - CHAIR: KAREN ZENTGRAF
 “TECHNIK UND TAKTIK IM LEISTUNGSSPORT DER SPORTSPIELE”

ROOM: HS3 SYMPOSIUM *DVS EXERCISE SCIENCE MEETS MOTOR CONTROL* – CHAIRS:
WALTRAUD STADLER & PHILIPP GULDE
 “PHYSICAL ACTIVITY TO IMPROVE POSTURAL CONTROL AND STABILITY”

ROOM: HS4 FREE SESSION *FATIGUE* - CHAIR: RALF KREDEL

09:45 – 11:15 KEYNOTE: SPORT – CHAIR: PHILIPP GULDE (HS 1) **10**

11:30 – 12:30 POSTER SESSION **10**

12:30 – 13:30 LUNCH **10**

13:30 – 15:00 KEYNOTES: ROBOTICS – CHAIR: DAVID FRANKLIN (HS 1) **10**

15:30 – 16:50 **10 - 11**

ROOM: HS1 SYMPOSIUM *VIRTUAL REALITY* - CHAIR: CORNELIA FRANK
 “VIRTUAL REALITY IN ACTION: ADVANCEMENTS IN MOTOR CONTROL, LEARNING, AND TRAINING”

ROOM: HS3 SYMPOSIUM *NEUROREHABILITATION I* - CHAIRS: ENRICA TRICOMI, CRISTINA PIAZZA & LORENZO MASIA
 “MOTOR CONTROL AND LEARNING FOR REHABILITATION “11

ROOM: HS4 FREE SESSION *MOTOR SKILLS* - CHAIR: NADJA SCHOTT

17:00 – 17:30 QUALIFICATION AWARD (HS 1) **11**

17:30 – 18:30 PANEL – FROM THEORY TO APPLICATION IN SPORT SCIENCE (HS 1) **11**

19:30 DINNER (CAMPUS OLYMPIAPARK) **11**

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FRIDAY

08:30 – 09:50

12 - 13

ROOM: HS1 SYMPOSIUM *NEUROREHABILITATION II* – CHAIR: JOACHIM HERMSDÖRFER & OLIVIER LAMBERCY

“EXOSKELETON AND WEARABLES ENHANCED PREVENTION AND TREATMENT”
(TUM INNOVATION NETWORK EXPRT)”

ROOM: HS3 FREE SESSION *MOTOR CONTROL* - CHAIR: AGNES ROBY-BRAMI & THORSTEN STEIN

ROOM: HS4 FREE SESSION *LEARNING II* - CHAIR: HERMANN MÜLLER & LISA MUSCULUS

10:00 – 11:30 KEYNOTES: HEALTH – CHAIR: JOACHIM HERMSDÖRFER (HS 1)

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12:00 – 13:20

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ROOM: HS1 SYMPOSIUM *HUMAN MACHINE INTERACTION* - CHAIRS: RAZ LEIB & DAVID FRANKLIN

ROOM: HS3 SYMPOSIUM *EXERCISE AND SLEEP* - CHAIR: SIMON STEIB

ROOM: HS4 FREE SESSION *NEUROLOGY* - CHAIR: JÜRGEN KONCZAK & PAVEL LINDBERG

13:30 – 13:45 CLOSING (HS 1)

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WEDNESDAY

10:00 – 11:20

ROOM: HS3 SYMPOSIUM **IMAGERY I** - CHAIR: MARTIN LOTZE

“MOTOR IMAGERY TRAINING AND ITS NEUROFUNCTIONAL MECHANISMS”

Overview about fMRI-research on mental practice

- Martin Lotze
University of Greifswald

fMRI in mental practice of aiming

- Quang Thong Thai
University of Greifswald

Cerebellar contributions to mental training

- Florent Lebon
University of Burgundy

The effect of motor imagery practice on cortical plasticity, motor learning and perceived fatigability in multiple sclerosis

- Ambra Bisio
University of Genoa

ROOM: HS4 SYMPOSIUM **MOTOR LEARNING** - CHAIR: PHILIPP WANNER & SIMON STEIB

“THE ROLE OF EXERCISE IN ENHANCING MOTOR LEARNING IN AGING AND NEUROREHABILITATION: INSIGHTS INTO MECHANISMS AND APPLICATIONS”

Motor Memory Formation in Old Age – A Systematic Review with Meta-Analysis

- Veit S. Kraft¹, Philipp Wanner², Marc Roig³, Joachim Hermsdörfer¹, Simon Steib²
¹ Technical University of Munich, ² Heidelberg University, ³ Montreal Center for Interdisciplinary Research in Rehabilitation

Effects of acute exercise on motor skill learning and memory in young and older adults

- Jesper Lundbye-Jensen
University of Copenhagen

The Effect of Multiple Sessions of Combined Motor Practice and Cardiovascular Exercise on Learning a Complex Balance Skill in Individuals with Parkinson's Disease

- Philipp Wanner, Nicole Frisch, Samuel Rikus, Simon Steib
Heidelberg University

The Influence of Chronic Exercise on Motor Skill Retention in Parkinson's Disease

- Jacopo Cristini¹, Freddie Seo¹, Alexandra Potvin-Desrochers², [...], & Marc Roig¹
¹ McGill University, ² CISSS de l'Outaouais

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ROOM: SE5 SYMPOSIUM *MANUAL DEXTERITY* - CHAIR: PÅVEL LINDBERG

“MANUAL DEXTERITY TECHNOLOGIES – FROM MUSICAL AND MARTIAL ARTS EXPERTISE TO POST-STROKE REHABILITATION”

Control of a working point outside the body. Kinematic investigation of Taichi sword practice

- Agnes Roby-Brami MD, Océane Dubois, Emmanuel Guigon
Sorbonne University

Lessons in Motor Control from Learning the Theremin

- Xiao Xiao
Da Vinci Higher Education

Measurement and rehabilitation of finger motor control after stroke

- Pålvel Lindberg, Coralie Van Ravestyn, Maxime Térémetza, [...], & Guillaume Turc
Institute for Psychiatry and Neuroscience of Paris

Haptic stimulation effects on finger tapping, cortical excitability and inhibition in healthy controls and stroke patients

- Elisa Dziezduk¹, Ines Jani¹, Paul Peter Arslan^{1 2}, [...], & Pavel Lindberg¹
¹ Université Paris Cité, ² Da Vinci Research Center

11:30 – 12:50

ROOM: HS3 SYMPOSIUM *IMAGERY II* - CHAIR: CORNELIA FRANK & ANDREA POLZIEN

“MECHANISMS OF IMAGERY AND IMAGERY TRAINING”

Motor imagery enhances performance of linked segments in a motor sequence

- Magdalena Gippert¹, Pei-Cheng Shih², Tobias Heed³, [...], & Vadim V. Nikulin¹
¹ Max Planck Institute for Human Cognitive and Brain Sciences, ² Sony Computer Science Laboratories, ³ University of Salzburg

Motor imagery is immune to variables that impact the online control of physical actions: A further test of the Motor-Cognitive Model

- Dr Marie Martel^{1 2}, Dr Scott Glover²
¹ University of Surrey, ² Royal Holloway University of London

Skill level influences imagery practice effects in complex motor action: Evidence for perceptual-cognitive scaffolding

- Cornelia Frank¹, Moritz Dresing²
¹ University of Bremen, ² Osnabrück University

Experience in a task influences effectiveness of imagery training in a similar task

- Andrea Polzien¹, David Vollert¹, Cornelia Frank²
¹ Universität Osnabrück, ² Universität Bremen

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ROOM: HS4 SYMPOSIUM PA & AGEING I - CHAIR: KERSTIN WITTE

„INTERVENTIONSEFFEKTE BEI ÄLTEREN ERWACHSENEN“

Einfluss eines multidimensionalen Bewegungsprogramms auf ausgewählte motorische Fähigkeiten bei gesunden, sportlich inaktiven Senioren (w/m) 60+

- Anneke Schumacher, Marlene Krumpolt, [...], & Kerstin Witte
Otto-von-Guericke-Universität Magdeburg

Auswirkungen einer Tanzintervention auf körperliche Fitness und Balance bei älteren Erwachsenen mit leichter kognitiver Störung

- Ulrich Thiel, Anita Hökelmann
Otto-von-Guericke Universität Magdeburg

Feasibility and effectiveness of serious games in motor training for people with dementia

- Alexander Prinz¹, Katja Orlowski², Eberhard Beck², Kerstin Witte¹
¹ Otto-von-Guericke University Magdeburg, ² Brandenburg University of Applied Sciences

Age-related hearing-impairment and cognitive-motor dual-task performance – impacts for training APP development

- Bettina Wollesen
German Sport University Cologne

ROOM: SE5 FREE SESSION LEARNING - CHAIR: STEFAN PANZER, MATTHIAS WEIGELT

Observational practice: Successful perceptual-motor response mapping induces learning advantages

- Stefan Panzer¹ ², Charles Shea²
¹ Saarland University, ² Texas A&M University College Station

The acquisition of sequence representations in action imagery practice and action observation practice

- Stephan F. Dahm¹, Robert M. Hardwick²
¹ University of Innsbruck, ² UC Louvain

Prior Belief in Another Agent Directly Tunes Our Sense of Agency

- Raz Leib, Sae Franklin, Niklas Heimburger, David Franklin
Technical University of Munich

Coordination efficiency in social interaction: A pilot study for the object-transport task in a real-life context

- Matthias Weigelt¹, Georgina Török², Jean-Luca Schulz¹, Yannic Topp¹, Natalie Sebanz³
¹ Paderborn University, ² Technical University of Munich, ³ Central European University

Evaluation of Contextual Cues in a Simulated Robot-Human Handover

- Simon Appoltshauser, Clara Günter, Joachim Hermsdörfer, David Franklin
Technical University of Munich

13:15 – 13:30 ROOM: HS1 OPENING

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13:30 – 15:00 ROOM: HS1 KEYNOTES: DEVELOPMENT – CHAIR: WALTRAUD STADLER

How our hands shape our minds

- Gustav Gredebäck
Uppsala University, Sweden

Motor-cognitive performance in typical and atypical developing populations - a lifespan perspective

- Nadja Schott
University of Stuttgart

15:30 – 16:50

ROOM: HS1 SYMPOSIUM *PA & AGING II* - CHAIR: MARCO TAUBERT

“BALANCE TRAINING IN HEALTHY OLDER INDIVIDUALS: EFFECTS ON BRAIN AND BEHAVIOR”

Response-optimized balance training in healthy older individuals: task-, transfer- and neural effects

- Nisha Maria Prabhu¹, Martin Matke², Nico Lehmann¹, Norman Aye¹, [...], & Marco Taubert¹
¹ Otto von Guericke University Magdeburg, ² Institute of Cognitive Neurology and Dementia Research (IKND)

Improved postural control in the elderly after long-term balance training is related to modulation in intracortical inhibition

- Yves-Alain Kuhn, Sven Egger, Matteo Bugnon, [...], & Wolfgang Taube
University of Fribourg

Brain microstructural changes after balance training in older adults: Novel insights based on quantitative MRI analysis

- Nico Lehmann¹, Yves-Alain Kuhn², Bogdan Draganski³, [...], & Marco Taubert¹
¹ Otto von Guericke University Magdeburg, ² University of Fribourg, ³ Insel University Hospital Bern

Improved sleep quality after three months of balance learning in older adults

- Selin Scherrer, Sven Egger, [...], Wolfgang Taube
University of Fribourg

ROOM: HS3 SYMPOSIUM **SENSORIMOTOR PREDICTIONS** - CHAIRS: STEPHAN ZAHNO & LISA MAURER

“SENSORIMOTOR PREDICTIONS”

(Predicted) task success mediates eye movements toward targets with high informational or motivational value

- Theresa K. Brand¹, Alexander C. Schütz², Hermann Müller¹, [...], & Lisa K. Maurer¹
¹ Justus-Liebig-Universität Gießen, ² Philipps-Universität Marburg

Ballistic sensorimotor actions under risk take Newtonian physics into account

- Fabian Tatai, Dominik Straub, Constantin A. Rothkopf
Technical University Darmstadt

Evidence for Bayesian exploitation of prior knowledge and continuous decision-making under uncertainty in tennis

- Damian Beck, Ralf Kredel, Ernst-Joachim Hossner, Stephan Zahno
Universität Bern

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Humans can learn bimodal priors in complex sensorimotor behavior

- Stephan Zahno¹, Damian Beck¹, Ralf Kredel¹, [...], & Konrad Körding²
¹ Universität Bern, ² University of Pennsylvania

ROOM: HS4 FREE SESSION *AGEING & BRAIN HEALTH* – CHAIR: BETTINA WOLLESEN, CARMEN KREWER

Binocular Saccade Velocity Abnormalities in Mild Traumatic Brain Injury

- John H Anderson
 University of Minnesota, Minneapolis VA Medical Center

Motor-sensory systems cannot countervail balance deficits in concussed athletes

- Bhagyashree Singh¹, Ingo Helmich²
¹ German Sport University Cologne, ² Smith College

Estimation of self-motion from conflicting sensory cues in human balance control

- Lorenz Assländer¹, Matthias Albrecht¹, Markus Gruber¹, Robert J. Peterka²
¹ University of Konstanz, ² VA Portland Health Care System

Aging relies on predictive gaze during interception

- Dimitris Voudouris, Leonard Gerharz
 Justus Liebig University Gießen

Feedback is differently relevant to children and adults: Neural correlates of error processing in a daily-based motor task

- Laura Faßbender¹, Lisa Maurer¹, Johannes Falck², [...], & Gudrun Schwarzer¹
¹ Justus Liebig University Gießen, ² Goethe University Frankfurt

17:00 – 18:30 ROOM: HS1 PANEL BOARD MEETING

18:30 WELCOME RECEPTION

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THURSDAY

08:30 – 09:30

ROOM: HS1 SYMPOSIUM *COMPETITIVE SPORT* - CHAIR: KAREN ZENTGRAF

“TECHNIK UND TAKTIK IM LEISTUNGSSPORT DER SPORTSPIELE”

Kinematic analysis of different arm swing techniques during spikes in competitive volleyball players

- Markus Tilp¹, Norbert Schrapf¹, George Giatsis²

¹ Universität Graz, ² University of Thessaloniki

Performance requirements of the volleyball attacking strike

- Björn Wieland, Yannick Prosch, Karen Zentgraf

Goethe University

Individual tactics “take-the-first”? Comparing decision making of elite athletes from two sports games

- Lisa Musculus, Laura Will, Dennis Redlich, [...], & Markus Raab

¹ German Sport University Cologne

ROOM: HS3 SYMPOSIUM *DVS EXERCISE SCIENCE MEETS MOTOR CONTROL* – CHAIR: WALTRAUD STADLER & PHILIPP GULDE

“PHYSICAL ACTIVITY TO IMPROVE POSTURAL CONTROL AND STABILITY”

Cortical and subcortical brain changes in response to balance training

- Marco Taubert¹, Benedikt Lauber²

¹ Otto von Guericke University Magdeburg, ² University of Fribourg

Cycling on the motor engram: Exercise as a strategy to enhance motor memory consolidation

- Simon Steib

Heidelberg University

Current therapeutic and training approaches to improve body balance control in individuals with acquired brain injury

- Leif Johannsen

RWTH Aachen University

ROOM: HS4 FREE SESSION *FATIGUE* - CHAIR: RALF KREDEL

Retrospective analysis of mental fatigue’s influence on reaction times to peripheral stimuli in virtual reality

- Dan Bürger, Luisa Peintner, Katalin Altrogge, [...], & Kerstin Witte

Otto-von-Guericke-University Magdeburg

Pupil Size Reflects the Attenuation of Motor Fatigability by Reward

- Jenny Imhof, Caroline Heimhofer, Marc Bächinger, [...], & Nicole Wenderoth

ETH Zürich

Finger Tapping at Maximal Speed Evokes a Crossover-Fatigability Effect

- Caroline Heimhofer, Marc Bächinger, Nicole Wenderoth

ETH Zürich

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09:45 – 11:15 ROOM: HS1 KEYNOTES: SPORT – CHAIR: PHILIPP GULDE

Optimizing sports performance through motivation and attention

- Gabriele Wulf
University of Nevada, Las Vegas

From elite athletes (and musicians) to patients - the importance of the cortical inhibitory system

- Wolfgang Taube
University of Fribourg

11:30 – 12:30 POSTER SESSION

12:30 – 13:30 LUNCH

13:30 – 15:00 ROOM: HS1 KEYNOTES: ROBOTICS – CHAIR: DAVID FRANKLIN

Motor learning: context dependency, meta-learning, and redundancy

- Daichi Nozaki
The University of Tokyo

Sensorimotor interaction in humans and with robots

- Etienne Burdet
Imperial College London

15:30 – 16:50

ROOM: HS1 SYMPOSIUM *VIRTUAL REALITY* - CHAIR: CORNELIA FRANK

“VIRTUAL REALITY IN ACTION: ADVANCEMENTS IN MOTOR CONTROL, LEARNING, AND TRAINING”

The impact of Virtual Reality on motor skill learning in sports: A systematic review

- Sophia Ryll¹, Cornelia Frank²,
¹ Osnabrück University, ² University of Bremen

Reliability of a Sport-Motor Test Battery in Virtual Reality

- Stefan Pastel, Florian Klenk, Dan Bürger, [...], & Kerstin Witte
¹ Otto-von-Guericke-University Magdeburg

Training-induced changes in brain activation during dual-task walking in virtual reality in healthy older adults

- Stefan Maas¹, Robert Stojan¹, Melanie Mack², [...], & Claudia Voelcker-Rehage¹
¹ University of Münster, ² University of Geneva

Full body hysteresis in a virtual reality environment

- Christoph Schütz
Bielefeld University

Using Immersive Virtual Reality to Remotely Assess Upper Limb Motor Control

- Jack Evans, Krasimira Tsaneva-Atanasova, Gavin Buckingham
University of Exeter

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ROOM: HS3 SYMPOSIUM *NEUROREHABILITATION I* - CHAIR: ENRICA TRICOMI, CRISTINA PIAZZA, & LORENZO MASIA

“MOTOR CONTROL AND LEARNING FOR REHABILITATION “

Motor neuron-computer interface for motor control in tetraplegia

- Daniela Souza de Oliveira¹, Matthias Ponfick², Dominik Braun¹, [...], & Alessandro Del Vecchio¹
¹ Friedrich-Alexander-Universität Erlangen-Nürnberg, ² Krankenhaus Rummelsberg GmbH

TBA

- Silvia Muceli
 Chalmers University of Technology

From Neural Pathways to Physical Motion: Geometric Foundations in Motor Control

- Johannes Lachner
 Massachusetts Institute of Technology

Validation of an implanted remotely actuated magnetic human-machine interface to study kinesthesia in limb amputees

- Federico Masiero^{1 2}, Tommaso Mori, Roberta Reho², [...], & Christian Cipriani²
¹ Heidelberg University, ² Scuola Superiore Sant'Anna

ROOM: HS4 FREE SESSION *MOTOR SKILLS* - CHAIR: NADJA SCHOTT

MMA- A Multilayer Model of Automatization

- Hermann Müller¹, Rouwen Cañal Bruland², Torsten Schubert³, Stefan Künzell⁴
¹ Justus Liebig University Gießen, ² Friedrich Schiller University Jena, ³ Martin Luther University Halle-Wittenberg, ⁴ University of Augsburg

The Effects of Intensive Exercise on Cortical Hemodynamics During Early Motor Memory Consolidation

- Philipp Wanner, Torsten Wüstenberg, Marc Dörr, [...], & Simon Steib
 Heidelberg University

Transcutaneous Spinal Direct Current Stimulation (tsDCS) improves Balance and Sprint Performance

- Teni Steingraber, Michel Klemm, Jan Straub, [...], & Jitka Veldema
 Bielefeld University

Head engagement during interception in aging

- Leonard Gerharz¹, Eli Brenner², Dimitris Voudouris¹
¹ Justus Liebig University Gießen, ² Vrije Universiteit Amsterdam

The effects of different shoe stack heights on running coordination at different running speeds

- Cagla Kettner, Bernd J. Stetter, Thorsten Stein
 Karlsruhe Institute of Technology

Empowering or disempowering? Coach-created motivational climates in rhythmic gymnastics

- Bianca Maria Laroëre¹, Jiří Mudrák², William Crossan¹, Vít Třebický¹
¹ Charles University, ² Czech Academy of Sciences

17:00 – 17:30 ROOM: HS1 QUALIFICATION AWARD

17:30 – 18:30 ROOM: HS1 PANEL – FROM THEORY TO APPLICATION IN SPORT SCIENCE

19:30 DINNER (CAMPUS OLYMPIAPARK)

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FRIDAY

08:30 – 09:50

ROOM: HS1 SYMPOSIUM NEUROREHABILITATION II – CHAIR: JOACHIM HERMSDÖRFER, OLIVIER LAMBERCY

“EXOSKELETON AND WEARABLES ENHANCED PREVENTION AND TREATMENT” (TUM INNOVATION NETWORK EXPRT)”

TBA

- Olivier Lambercy
ETH Zurich

Construct validity and responsiveness of clinical upper limb measures and sensor-based real-world arm use during the first year after stroke

- Johannes Pohl, Geert Verheyden, Jeremia Philipp Oskar Held, Andreas Ruediger Luft, Chris Easthope-Awai, Janne Marieke Veerbeek
Luzern

Executive functions in older adults with mild cognitive impairment and their association with activities of daily living performance

- Lucas Wolski, Paula Villa-Fulton, Joachim Hermsdörfer, Timo Grimmer
Technical University of Munich

Prediction of perceived manual ability in multiple sclerosis

- Philipp Gulde, Valerie Thorbecke, Paula Villa-Fulton, [...], & Joachim Hermsdörfer
Technical University of Munich

ROOM: HS3 FREE SESSION *MOTOR CONTROL* - CHAIR: AGNES ROBY-BRAMI & THORSTEN STEIN

Age Differences in Object Manipulation Tasks: Old Individuals Take Longer to Adapt to Object Properties

- Lena Kopnarski, Julian Rudisch, Claudia Voelcker-Rehage
University of Münster

The influence of the left ventro-dorsal stream on mechanical problem solving: a TMS study

- Clara Seifert, Thabea Kampe, Afra Wohlschläger, Joachim Hermsdörfer
Technical University of Munich

Motor and proprioceptive learning transfers to untrained limb segments within and across the body hemisphere

- Juergen Konczak¹, Ass. Huiying Zhu², Yizhao Wang³, Lorenzo Masia⁴
¹ University of Minnesota, ² Indiana University at Kokomo, ³ Tianjin Huanhu Hospital, ⁴ Technical University of Munich

Force field adaptation requires specific muscle synergies

- Michael Herzog¹, Denise J. Berger², Marta Russo², [...], & Thorsten Stein¹
¹ Karlsruhe Institute of Technology (KIT), ² IRCCS Fondazione Santa Lucia

Limb Impedance Affects Adaptation to Novel Dynamics

- Iain Hunter, Sae Franklin, Raz Leib, David Franklin
Technical University of Munich

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ROOM: HS4 FREE SESSION *LEARNING II* - CHAIR: HERMANN MÜLLER & LISA MUSCULUS

"In-vivo histology" of motor skill learning-induced white matter plasticity in the human brain

- Norman Aye¹, Jörn Kaufmann¹, Hans-Jochen Heinze¹, [...], & Nico Lehmann²

¹ OVGU Magdeburg, ² Max Planck Institute

Effects of the COMT Val158Met polymorphism on neural augmented-feedback processing and motor automatization

- Linda Margraf¹, Daniel Krause¹, Klaus Blischke², [...], & Matthias Weigelt¹

¹ Paderborn University, ² Saarland University

Just like riding a bike? Learning to ride a reversed bicycle

- Pascal Nietschmann, David Franklin

Technical University of Munich

Investigating the effects of post-encoding cardiovascular exercise on motor memory consolidation in the elderly

- Manuel Hettmannsperger, Philipp Wanner, Josua Lim, Simon Steib

Heidelberg University

Arm immobilization affects motor memory reactivations during sleep

- Adrien Conessa¹, Damien Léger^{2,3}, Arnaud Boutin¹

¹ CIAMS, Université Paris Saclay, ² Université Paris-Cité, ³ CIAMS, Université Paris-Saclay

10:00 – 11:30 KEYNOTES: HEALTH – CHAIR: JOACHIM HERMSDÖRFER (HS 1)

Neural substrates of motor skill learning in health and disease

- Leonardo G. Cohen

National Institute of Neurological Disorders and Stroke, NIH, Washington

Motor control and learning in older adults and clinical samples

- Claudia Voelcker-Rehage

University of Münster

12:00 – 13:20

ROOM: HS1 SYMPOSIUM *HUMAN MACHINE INTERACTION* - CHAIR: RAZ LEIB & DAVID FRANKLIN

“SENSORY FEEDBACK IN HUMAN-MACHINE INTERACTION AND PROSTHETICS”

TBA

- Cristina Piazza

Technical University of Munich

Adaptation to Periodic Motion Perturbations in Robot-Assisted Minimally-Invasive Surgery Training

- Yarden Sharon^{1,2}, Tifferet Nevo², Daniel Naftalovich^{3,4}, [...], & Ilana Nisky²

¹ Max Planck Institute for Intelligent Systems, ² Ben-Gurion University of the Negev, ³ California Institute of Technology, ⁴ University of Southern California

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Haptic Communication and Role Dynamics in Human-Human and Human-Robot Collaboration

- Yiming Liu^{1, 2}, Raz Leib¹, David Franklin¹

¹ Technical University of Munich, ² Imperial College London

Manipulating Tactile Sensory Feedback Affects the Perception of Delayed Stiffness

- Raz Leib

Technical University of Munich

ROOM: HS3 SYMPOSIUM *EXERCISE AND SLEEP* - CHAIR: SIMON STEIB & NICOLE FRISCH

“HOW EXERCISE AND SLEEP SHAPE LEARNING AND PERFORMANCE IN HUMAN MOVEMENT “

The Effects of High-Intensity Interval Training on Sleep and Sleep-related Motor Memory Consolidation

- Nicole Frisch¹, Beate Ditzen¹, Kerstin Hoedlmoser², [...], & Simon Steib¹

¹ University of Heidelberg, ² University of Salzburg

Training the Sleeping Brain: Effects of Acute Exercise on Sleep and Memory

- Daniela Ramirez Butavand, Gordon Feld, Simon Steib

University of Heidelberg

The Effects of Sleep on Gross Motor Sequence Learning by Motor Imagery

- Sophia Schnelzer¹, Romaric Lefèvre², Ursula Debarnot², [...], & Kerstin Hoedlmoser¹

¹ University of Salzburg, ² Université Claude Bernard Lyon

The Effects of Physical Exercise on Extinction Memories and their Contextualization

- Lianne N. Wolsink, Katharina Beck, Oliver T. Wolf, [...], & Valerie L. Jentsch

Ruhr University Bochum

ROOM: HS4 FREE SESSION *NEUROLOGY* - CHAIR: JÜRGEN KONCZAK & PAVEL LINDBERG

Impaired anticipatory head motion stabilization during walking in children and adolescents with cerebral palsy

- Leif Johannsen^{1, 3}, Dörte Zietz², Katrin H. Schuller³

¹ RWTH Aachen University, ² Hochschule für Gesundheit, ³ Technical University of Munich

Occurrences in the gait pattern of children with achondroplasia compared to an age-matched control group

- Mareike Hergenröther, Klaus Mohnike, Katja Palm, Kerstin Witte

Otto von Guericke University Magdeburg

Developing a Virtual Reality Tool to Diagnose Developmental Coordination Disorder

- Gavin Buckingham¹, Hoayang Du²

¹ University of Exeter, ² Technological University Dublin

Motor neuron-computer interface for motor control in tetraplegia

- Daniela Souza de Oliveira¹, Matthias Ponfick², Dominik Braun¹, [...], & Alessandro Del Vecchio¹

¹ Friedrich-Alexander-Universität, ² Krankenhaus Rummelsberg GmbH

13:30 – 13:45 ROOM: HS1 CLOSING

Friday, 21.03.2025