[P1.001] Long term follow-up study with non-invasive brain stimulation (NBS) (rTMS and tDCS) in parkinson’s disease (PD). Strong age dependency in the effect of NBS
J Málly*, N. Geisz¹, T. Stone², E. Dina³,
¹Inst of Neurorehabilitation, Hungary, ²University of Glasgow, United Kingdom, ³Semmelweis University, Hungary

[P1.002] Non electrical and non pharmacological ways of vagus nerve stimulation: Overview, pathways and clinical implications
M Tieck*, I. Rajas¹, M. Jarczok²,
¹Universidad CES, Colombia, ²Ulm University, Germany

[P1.003] Which heuristic to use? Plotting the position of the left dorsolateral prefrontal cortex: A comparison of clinical methods
J. Bryant¹, L. Valencia LCSW², C. Cochran¹, M Cochran Md*³,²
¹Centre College, USA, ²NeuroScience & TMS Treatment Center, USA, ³Vanderbilt University Medical Center, USA

M Abo Aoun*, B. Meek, M. Modiirrousta,
Saint Boniface General Hospital, Canada

[P1.005] A systematic review and meta-analysis on excitability and inhibitory imbalance of the motor cortex as indexed with TMS in autism spectrum disorder
F Masuda*, T. Miyazaki¹, S. Nakajima¹, S. Tsugawa¹, M. Wada¹, R. Tarumi¹, K. Ogyu¹, P. Croarkin², D. Blumberger³, Z. Daskalakis³, M. Mimura¹, Y. Noda¹,
¹Keio University, Japan, ²Mayo Clinic, USA, ³University of Toronto, Canada

[P1.006] Resting motor threshold’s asymmetry correlates with the cognitive level in alzheimer’s
M. Uehara¹, G. Rutherford¹, C. Aldaba¹, B. Lithgow¹, B. Mansouri¹, L. Koski², C. Millikin², P. Fitzgerald³, Z Moussavi*³,
¹University of Manitoba, Canada, ²McGill University, Canada, ³Monash University, Australia

[P1.007] Neural correlates of transcranial direct-current stimulation enhanced surgical skill learning
P Ciechanski*, K. Hecker², B. Wilson³, C. Williams⁴, S. Lopushinsky², S. Anderson², A. Cheng², A. Kirton²,
¹University of Alberta, Canada, ²University of Calgary, Canada, ³Carleton University, Canada, ⁴University of Victoria, Canada

F. Tie, C Feng*,
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[P1.009] Modulating emotional empathy using individualized TACS protocol
J Kang*¹,²,³, Y. Park¹, H. Lim¹, C. Wallraven¹,
¹Korea University, Republic of Korea, ²Empathy Research Institute, Republic of Korea, ³DSTC, Republic of Korea,
[P1.010] Improvement in sleep disturbances with high frequency repetitive transcranial magnetic stimulation in depressed adolescents
A Sonmez*, C. Lewis, D. Doruk Camsari, J. Vande Voort, K. Schak, P. Croarkin,
Mayo Clinic, USA

[P1.011] Safety of transcranial direct current stimulation across three brain regions in fasting
A. Almousa 1, R. Alajaji 1, M. Alaboudi 1, F. Al-sultan 1, S Bashir2,*
1King Saud University, Saudi Arabia, 2King Fahad Specialist Hospital, Saudi Arabia

[P1.012] One session of transcranial direct current stimulation (tDCS) does not modulate mu suppression when learning a novel motor task in healthy adults
E Gregory*, N. Hodges1, F. Vila-Rodriguez2, A. Muller1, N. Virji-Babul1,
1University of British Columbia, Canada, 2University of British Columbia, Canada

[P1.013] Evaluating the effect of simultaneous transcranial direct current stimulation and repetitive transcranial magnetic stimulation on minimally conscious state by using EEG and functional MRI
Y Lin*, Q. Huang1, T. Han1, Y. Su1, D. Gao1, W. Chen1, H. Ye1, T. Liu2, X. Tian2, Z. Zhen3, Y. Wang1,
1Capital Medical University, China, 2Tianjin Medical University, China, 3Beijing Normal University, China

[P1.014] Inter-regional priming of m1: Preliminary insights from tms-eeeg
M Do*, M. Kirkovski1, N. Rogasch2, S. Bekkali1, J. He1, L. Byrne1, P. Enticott1,
1Deakin University, Australia, 2Monash University, Australia

[P1.015] Cortical plasticity induced by intermittent theta burst stimulation in NF1 patients and unaffected controls
J Castricum*, J. Talen, M. Ottenhoff, W. Taal, S. Kushner, Y. Elgersma,
Erasmus MC, Netherlands

[P1.016] Cortical functional reorganization of language function in glioma patients as measured by nrTMS
S Ille*, L. Engel, B. Meyer, S. Krieg,
Technical University of Munich, Germany

[P1.017] Robust clinical benefit of multi-lead deep brain stimulation for treatment of gilles de la tourette syndrome and its comorbidities
B Kakusa*, S. Saluja, W. Tate, F. Espil, C. Halpern, N. Williams,
Stanford University School of Medicine, USA

[P1.018] Efficacy of cathodal transcranial direct current stimulation on brain networks in patients with focal epilepsy
W. Luo1, H. Liu2, P. Zhang2, J Ding*1,
1Fudan University, China, 2Shanghai Jiao Tong University, China

[P1.019] Asymmetric connectivity in the human temporal lobe assessed by cortico-cortical evoked potentials
Y Novitskaya*, M. Dümpeleman, A. Schulze-Bonhage,
University of Freiburg, Germany

[P1.020] Spatiotemporal characteristics of single-pulse TMS-evoked potentials from M1 and DLPFC in healthy participants and patients with schizophrenia
Y Noda1,2, M. Barr2, R. Zomorrodii2, R. Cash3, T. Rajji4, P. Lioumis2, R. Chen4, Z. Daskalakis2, D.
Blumberger2,
1Keio University School of Medicine, Japan, 2Centre for Addiction and Mental Health, Canada, 3Monash Alfred Psychiatry Research Centre, Australia, 4University Health Network, Canada

[P1.021] Quantifying epileptic connectivity using cortico-cortical evoked potentials and similarity metrics
D Prime1,2, M. Wooldr1,2, A. Koenig2, L. Gillinder2, J. Papacostas2, S. O'Keefe1, D. Rowlands1, S.
Dionisio2,
1Griffith University, Australia, 2Mater Hospital, Australia

[P1.022] Modulation of SSVEPs using frequency matched IACS
J Dowsett1, C. Herrmann 2, P. Taylor1,
1LMU, Germany, 2University of Oldenburg, Germany

[P1.023] Learning to expect: Predicting sounds during movement is related to sensorimotor associations during listening
J Burgess*, B. Major, C. McNeel, G. Clarke, G. Youssef, J. Lum, P. Enticott,
Deakin University, Australia

[P1.024] Phase-specific aftereffects of transcranial alternating current stimulation on visual processing
M Fiene*, B. Schwab1, J. Missehlom1, C. Herrmann2,3, T. Schneider1, A. Engel1,
1University Medical Center, Germany, 2Carl von Ossietzky University, Germany

[P1.025] Modulation of interhemispheric alpha-band connectivity by transcranial alternating current stimulation
B Schwab*, J. Missehlom, A. Engel,
University Medical Center, Germany
[P1.026] Monitoring ECT-related anxiety: The ECT-related anxiety questionnaire (ERAQ)
J. Obbels1, K. Vanbrabant1, E Verwijck2, F. Bouckaert1, P. Sienaert1,
1University of Leuven, Belgium, 2University of Amsterdam, Netherlands

[P1.027] Individualizing brainstimulation through concurrent TMS/fMRI
M Tik*, M. Woletz, M. Princic, A. Schuler, N. Geissberger, A. Hummer, C. Windischberger,
Medical University of Vienna, Austria

[P1.028] Functional localizers for improved DLPC targeting: A comparison against standard rTMS targets
M. Princic, M Tik*, M. Woletz, N. Geissberger, C. Windischberger,
Medical University of Vienna, Austria

[P1.029] Recent advance in the treatment of patients with disorders of consciousness: A review of transcranial direct current stimulation efficacy
G Martens1, A. Barra1, S. Laureys1, A. Thibaut1,2,
1University Hospital of Liege, Belgium, 2Harvard Medical School, USA

[P1.030] Basolateral amygdala deep brain stimulation for treatment refractory combat PTSD: data from the first two cases
R Koek Md*1,2, J. Langevin, MD3,2, S. Krahl, PhD4,2, J. Chen, MD, PhD5,2, D. Sultzer, MD6,2, M. Mandelkern, MD, PhD7,2, A. Kulick, PhD8,
1Psychiatry VA Greater Los Angeles, USA, 2UCLA, USA, 3Neurosurgery, VA Greater Los Angeles, USA, 4Neurophysiology, VA Greater Los Angeles, USA, 5Neurology, VA Greater Los Angeles, USA, 6Gero/Neuropsychiatry, VA Greater Los Angeles, USA, 7Neuroradiology, VA Greater Los Angeles, USA, 8Neuropsychology, VA Greater Los Angeles, USA

[P1.031] Ultrasound evoke ion channels in caenorhabditis elegans by mechanical effects
W. Zhou1, X. Wang1,2, L. Niu1, L. Meng*, H. Zheng1,
1Chinese Academy of Sciences, China, 2Northeastern University, China

[P1.032] If you prepare to move, so do I... sort of: motor resonance from action-preparation to action-execution
C Mc Neel*, C. Davies, J. Lum, M. Fuller-Tyszkievicz, N. Albein-Urios, P. Enticott,
Deakin University, Australia

[P1.033] The posterior parietal cortex has a greater role than the supplementary motor area in novel motor behaviour: A TMS-based virtual disruption study
P Shojaii*, D. Turner,
University of East London, United Kingdom

[P1.034] Changes of multisegmental responses of the calf muscles during transcranial magnetic stimulation and electrical stimulation of peripheral nerve
A Militskova*, G. Yafarova1, T. Balltina1, I. Lavrov1,2,
1Kazan Federal University, Russian Federation, 2Mayo Clinic, USA

[P1.035] Molecular and elemental contrast microscopy for biochemical fingerprinting of the cellular action mechanisms underlying IDCS in appetite control
A Surowka*, Z. Ziember3, M. Czyzycki1,2, A. Gianoncelli1, D. Bedolla1, G. Birarda1, K. Kasper4, M. Szczersbowska-Balachowska2, L. Vaccari1,
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[P1.036] A two-site, open-label, non-randomized update, suggests focal electrically administered seizure therapy (FEAST) may have a reduced time to re-orientation compared to right unilateral ultrabrief pulse electroconvulsive therapy (UBP-RUL ECT)
G Sahlem1, E. Short1, W. McCal1, P. Rosenquist2, J. Fox1, A. Manett1, Z. Nahas3, C. Mazingue1, M. George1,4, H. Sackheim5,
1Medical University of South Carolina, USA, 2Medical College of Georgia, USA, 3University of Minnesota, USA, 4-5Ralph H. Johnson VA Medical Center, USA, 5Columbia University, USA

[P1.037] Abnormal functional frontal asymmetry and behavioral correlates in adult ADHD: A TMS-EEG study
A Avnit*, U. Alyagon, S. Zibman, A. Zangen,
Ben-Gurion University of the Negev, Israel

[P1.038] Persistent changes in cortical, subcortical and network-level dynamics induced by 10-Hz tACS applied over bilateral parietal cortex: a MEG study
C Tesche*, J. Houck2,
1University of New Mexico, USA, 2The Mind Research Network, USA

[P1.039] Persistent physiological changes in female AFL players following sports related concussions
B Major*,
Deakin University, Australia
Inter-individual variability in cortical plasticity assessment in healthy subjects by application of theta burst stimulation on primary motor cortex
A Hamza1, S. Bashir2,
1National University of Computer and Emerging Sciences, Pakistan, 2King Fahad Specialist Hospital, Saudi Arabia

The relationship between short interval intra-cortical inhibition and stopping ability
N Chowdhury*, E. Livesey, J. Harris,
University of Sydney, Australia

A systematic review on the effects of non-invasive neuromodulation on executive and other cognitive functions in addictive disorders
R Schluter1, J. Daams1, R. van Holst1, A. Goudriaan1,2,1
1Amsterdam UMC, Netherlands, 2Arkin, department of care, research and quality of care, Netherlands

Assessing the validity and reliability of rapid transcranial magnetic stimulation mapping
R Cavaleri1, S. Schabrun1,2, L. Chipchase1,3,
1Western Sydney University, Australia, 2Neuroscience Research Australia Australia, Australia, 3University of Canberra, Australia

Assessing cTBS virtual lesioning effects on parietal cortices and its ability to shift spatial attention
A Thomas1, M. Bellgrove2, M. Rogers1,
1Deakin University, Australia, 2Monash University, Australia

EEG functional connectivity predicts causal brain interactions
J. Vink1, M. Westover2, A. Pascual-Leone3,4,5, M. Shafii6,7,
1University Medical Center Utrecht, Netherlands, 2Massachusetts General Hospital, USA, 3Hardvard Medical School, USA, 4Universitat Autonoma de Barcelona, Spain, 5Beth Israel Deaconess Medical Center, USA, 6Harvard Medical School, USA

Effects of intermittent theta burst stimulation combined with mirror visual feedback in healthy adults
J Zhang*, K. Fong,
The Hong Kong Polytechnic University, Hong Kong

The association between transcranial magnetic stimulation evoked potential response and resting electroencephalography
L. Mulsant1, A. Daskalakis1, R Zomorrodi1, R. Rajji1, D. Blumberger1,2, Z. Daskalakis1,2,
1Centre for Addiction and Mental Health, Canada, 2University of Toronto, Canada

Modifying the brain’s resting-state network connectivity with near infrared transcranial photobiomodulation
R Zomorrodi1, G. Loheswaran2, A. Pushparaj3, I. Lim2,
1Centre for Addiction and Mental Health, Canada, 2University of Toronto, Canada

Exposure to an alternating magnetic field generated by a rotating permanent magnet decreases the motor cortex excitability
M Christova1,2, D. Rafolt3, S. Fresnoza4, E. Gallasch2,
1University for Applied Sciences, FH-Joanneum Graz, Austria, 2Medical University Graz, Austria, 3Medical University of Vienna, Austria, 4University of Graz, Austria

Exploratory study of optimal conditions of repetitive transcranial magnetic stimulation of the primary motor cortex for chronic pain
K Hosomi*, N. Mori, T. Mano, H. Kishima, Y. Saitoh,
Osaka University Graduate School of Medicine, Japan

Investigating the neurophysiological mechanisms of transcranial alternating current stimulation
B. Asamoah, A. Khatoun, M Mc Laughlin*
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Dopamine depletion effects on cognitive flexibility as modulated by tDCS of the dIPFC
C. Borwick1, R. Lal1, C. Stagg2, L Aquili3,1
1Sheffield Hallam University, United Kingdom, 2Oxford University, United Kingdom

TMS-EEG and TMS-EMG to assess the pharmacodynamic profile of a novel potassium channel opener (XEN11101) on human cortical excitability
I Premoli1*, G. Beatch2, P. Rossini1, E. Abela1, K. Posadas3, L. Green3, N. Yogo3, P. Goldberg2, M. Richardson1,
1King’s College London, United Kingdom, 2Xenon Pharmaceuticals Inc., Canada, 3National Institute for Health Research (NIHR), United Kingdom

The role of the DLPFC in conflict resolution: Investigating the functional architecture of cognitive control using cTBS and combined NIRS/EEG

3rd International Brain Stimulation Conference
**P1.055**  
Relationship of active to resting motor threshold influences the aftereffects of theta-burst stimulation  
P Fried**,1, A. Jannati**,1, T. Morris**,1, S. Buss**,1, E. Santannecci**,1, M. Shafi**,1, A. Pascual-Leone**2,1,  
1Harvard Medical School, USA, 2Institut Gutman, Spain

**P1.056**  
Activity breaks during prolonged sitting enhance responses to paired associative stimulation  
E Bojesen Møller**,1, M. Ekblom, O. Tarassova, Ö. Ekblom,  
GIH, Sweden

**P1.057**  
EEG network-specificity of response to fMRI-guided TMS perturbation of the default mode and  
dorsal attention networks is correlated with cognition  
Santannecci, Harvard Medical School, USA

**P1.058**  
Repetitive transcranial magnetic stimulation effects on the cognitive function of the patients with  
depressive disorders: A retrospective study  
R Rostami**,1, R. Kazemi, S. Geshani, Z. Kazeroonian,  
University of Tehran, Iran, Islamic Republic of

**P1.059**  
Transcranial magnetic stimulation for the treatment of nicotine addiction: A systematic review  
P. Vázquez-Beceiro, M. Bort, E. M. Marrón, R Viejo Sobera**,1,  
Universitat Oberta de Catalunya, Spain

**P1.060**  
Long-term effects of rTMS on the functional brain networks in treatment-resistant depression  
R Ge**,1, J. Downar2, D. Blumberger2, Z. Daskalakis2, R. Lam1, F. Vila-Rodriguez1,  
1University of British Columbia, Canada, 2University of Toronto, Canada

**P1.061**  
Relationship of cognitive reserve and cortical excitability in healthy cognitive agers and amyloid  
positive mild cognitive impairment  
S Buss**,1, D. Barthes-Faz2,1, P. Davila Perez1,2, E. Santannecci1, A. Pascual-Leone1,4, P. Fried1,  
1Beth Israel Deaconess Medical Center, USA, 2University of Barcelona, Spain, 3Universidade da  
Coruña, Spain, 4Universitat Autònoma, Spain

**P1.062**  
Behavioral and hemodynamic effects of prefrontal anodal stimulation in healthy older adults: A  
simultaneous tDCS-fNIRS study  
E Di Rosa**1,2,3, S. Brigadoi**1,2, D. Mapelli2, S. Cutini2, V. Tarantino2,4, R. Dell’Acqua2, T. Braver1,  
A. Vallesi2,5,  
1Washington University in St. Louis, USA, 2University of Padova, Italy, 3Keele University, United  
Kingdom, 4University of Palermo, Italy, 5San Camillo Hospital IRCCS, Italy

**P1.063**  
Sensory contamination in TMS-EEG recordings: Can we isolate TMS-evoked neural activity?  
M Biabani**,1, A. Fornito1, T. Mutanen 2,3, J. Morrow1, N. Rogasch1,  
1Monash University, Australia, 2Aalto University, Finland, 3Helsinki University Hospital, Finland

**P1.064**  
Interventional psychiatry, a new competency for 21st century psychiatry residents  
R Ostroff**,1, B. Kitay, S. Wilkinson, J. Taylor,  
Yale University, USA

**P1.065**  
Translational non-invasive brain stimulation from mouse to monkey to human  
I Alekseichuk**,1, K. Mantell, S. Shirinpour, A. Opitz,  
University of Minnesota, USA

**P1.066**  
Two-week repetitive transcranial magnetic stimulation of the dorsal lateral prefrontal cortex  
does not affect cortical excitability in chronic smokers  
R. Bonalontal1,2, K. Caulfield1, S. Henderson1, K. Hartwell1, K. Brady1, M. George1, X Li**1,  
1Medical University of South Carolina, USA, 2University of South Carolina, USA

**P1.067**  
Mapping interhemispheric interactions with paired-pulse TMS  
D Cooke**,1, D. Corp1,2, J. Hsu1, R. Perelion Alfonso3, A. Pascual-Leone1, M. Fox1,4,  
1Beth Israel Deaconess Medical Center, USA, 2Deakin University, Australia, 3Department of  
Neurology, University Medical Centre Ljubljana, Slovenia, 4Harvard Medical School, USA

**P1.068**  
The Non-invasive Neurostimulation Network (N3): Shared institutional infrastructure to accelerate  
brain stimulation research  
A Kirton**,1, E. Zewdie, L. Gan, B. Selby, F. MacMaster, O. Monchi,  
University of Calgary, Canada

**P1.069**  
EEG Oscillations Response To Dual-Target rTMS Therapy of Parkinson Disease and Co-Occurring  
Depression.  
L. Aftanas**1,2, K. Kulikova**3, I. Brack**3, S. Dzemidovich**3, E. Filimonova3, B. Doronin4,  
1Department of Experimental & Clinical Neuroscience, Lab. of Affective, Cognitive &  
Translational Neuroscience, FSBsI Scientific Research Institute of Physiology & Basic Medicine,  
Russian Federation, 2Department of Neuroscience, Novosibirsk State University, Russian

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3rd International Brain Stimulation Conference
**P1.070** Intracranial network stimulation as a method to suppress epileptic activity  
D Van Bloois*, G. Huijskamp, E. Aarnoutse, M. Zijlmans, N. Ramsey, F. Leijten,  
University Medical Center Utrecht, Netherlands

**P1.071** Adverse events associated with repeated sessions of tDCS: A systematic review and meta-analysis  
S Nikolin*, C. Huggins2, D. Martin1, A. Alonzo1, C. Loo1,  
1University of New South Wales, Australia, 2Harrogate and District NHS Foundation Trust, United Kingdom

**P1.072** Forgiveness and cognitive control – Provoking revenge via theta-burst-stimulation of the DLPFC  
M Maier*, D. Rosenbaum1, F. Haeussinger1, M. Brüne2, B. Enzi1, C. Plewnia1, A. Fallgatter1, A. Ehls1,  
1University of Tuebingen, Germany, 2Ruhr-University Bochum, Germany, 3Werner Reichardt Centre for Integrative Neuroscience (CIN), Germany

**P1.073** Investigating the causal role of frontal and parietal cortices in intention understanding: a cTBS study  
A Koul*, M. Soriano2, A. Avenanti3, A. Cavallo1, C. Becchio1,  
1Fondazione Istituto Italiano di Tecnologia, Italy, 2University of Torino, Italy, 3University of Bologna, Italy, 4IRCCS Fondazione Santa Lucia, Italy

**P1.074** EPI-based target tracking in concurrent TMS-fMRI  
M Woletz*, M. Tik, M. Prinčič, A. Schuler, C. Windischberger,  
Medical University of Vienna, Austria

**P1.075** Neural correlates of the effect of add-on transcranial direct current stimulation on persistent auditory verbal hallucinations in schizophrenia: A functional MRI study  
A Bose*, G. Bhalarao, S. Agarwal, V. Shivakumar, S. Kalmady, S. Shenoy, V. Sreeraj, J. Narayanaswamy, G. Venkatasubramanian,  
National Institute of Mental Health and Neuro Sciences, India

**P1.076** A manipulative approach to the phase response function of EEG oscillations by transcranial magnetic stimulation  
T Onojima*, Y. Okazaki1, K. Kitajo1,  
1RIKEN Center for Brain Science, Japan, 2National Institute for Physiological Sciences, Japan

**P1.077** Trans-spinal direct current stimulation in primary orthostatic tremor: A randomized, double-blind, sham-controlled, crossover trial  
J Lamy*, P. VARRIALE1, S. MEHDI1, E. APARTIS1, E. ROZE1, M. VIDAILHET1,  
1ICM, France, 2APHP - Saint Antoine Hospital, France, 3APHP - Pitie Salpetriere Hospital, France

**P1.078** Effect of rTMS therapy on pain descriptors and corticomotor excitability in fibromyalgia: A randomized control trial  
V Tiwari*, S. Nanda, B. Mattoo, U. Kumar, S. Kumaran, R. Bhatia,  
All India Institute of Medical Sciences, India

**P1.079** Variability of tDCS effects on visual detection: Relating performance to individual electric field models  
S Esterer*, L. Rountree1, H. Johnston1, L. Breakwell1, T. Redmond1, D. McGonigle1,  
1Cardiff University, United Kingdom, 2Aston University, United Kingdom

**P1.080** Inter-postural changes in TDCS and TMS electric fields  
M Mikkonen*, I. Laakso,  
Aalto University, Finland

**P1.081** High frequency Deep TMS over the bilateral insula is associated with increased degree centrality in the prefrontal cortex of obese subjects: Preliminary evidence  
F. Devoto1, A. Ferrulli*, L. Zapparoli1, S. Massarini1, C. Verga1, G. Banfi1, E. Paulesu2, L. Luzi3,  
1IRCCS Istituto Ortopedico Galeazzi, Italy, 2University of Milano-Bicocca, Italy, 3IRCCS Policlinico San Donato, Italy, 4IRCCS Istituto Ortopedico Galeazzi, Italy, 5University Vita e Salute San Raffaele, Italy

**P1.082** The impact of deep brain stimulation on personality, identity, and relationships in neurological and psychiatric conditions  
C Thomson*, R. Segrave1, E. Racine2, A. Carter1,  
1Monash Institute of Cognitive and Clinical Neuro, Australia, 2Pragmatic Health Ethics - Institut de recherches cliniques de Montreal, Canada

**P1.083** Using rTMS to modulate neural networks involved in freezing of gait in Parkinson’s disease  
D Lench*, T. Kearney-Ramos, G. Carmen Lopez, W. DeVries, A. Hydar, C. Hanlon, G. Revuelta,  
Medical University of South Carolina, USA
[P1.084] Accelerated theta burst stimulation for Bipolar I and II: Assessing clinical changes pre- and post-treatment
C Tischler*, M. Gulser, K. Stimpson, E. Cole, N. Williams, Stanford University, USA

[P1.085] Withdrawn

[P1.086] Photobiomodulation for cognitive enhancement in healthy adults
1Psychology Clinical Neuroscience Center, Department of Psychology, University of New Mexico, USA, 2Army Research Laboratory, Aberdeen Proving Ground, MD, USA, 3University of New Mexico, USA, 4Army Research Laboratory, USA, 5The Mind Research Network, USA

[P1.087] Pre-TMS phase and power of ongoing EEG oscillations modulates cortical activity response at the dorsolateral prefrontal cortex
A Bansal*, CAMH, Canada, University of Toronto, Canada

[P1.088] Using brain stimulation to modify a brain network and support abstinence during alcohol use disorder recovery
Y Camchong*, A. Roy1, C. Gilmore2, M. Thao1, M. Kazynski1, M. Fiecas1, B. Mueller1, A. MacDonald III1, M. Kushner1, K. Lim1
1University of Minnesota, USA, 2Defense and Veterans Brain Injury Center Minneapolis VA Medical Center, USA

[P1.089] Predicting transcranial magnetic stimulation response with machine learning in a treatment resistant depression population
A Janjua*, L. Hack2, S. Dover1, G. Job1, W. McDonald1, P. Riva-Posse1
1Emory University School of Medicine, USA, 2Stanford University School of Medicine, USA

[P1.090] Improving working memory in older adults by synchronizing cortical interactions with alternating current
R Reinhart*, S. Grover, C. Wang, J. Nguyen, Boston University, USA

[P1.091] Decoding corticospinal excitability changes during a force tracking task
V Van Polanen*, I. Meeusen, M. Davare, KU Leuven, Belgium

[P1.092] Response to rTMS in patients with medication-resistant depression is linked with the functional brain network affiliation of the stimulation site
C Lynch*, M. Dubin, F. Gunning, C. Liston, Weill Cornell Medicine, USA

[P1.093] Low-frequency rTMS to ventral medial frontal cortex induces depression-like behavioral and physiological state in monkeys
S Nakamura*, K. Tsutsui, Tohoku University, Japan

[P1.094] Pre-TMS phase and power of ongoing EEG oscillations modulates cortical activity response at the dorsolateral prefrontal cortex
A Bansal*, CAMH, Canada, University of Toronto, Canada

[P1.095] Neuromodulation by itbs and 10hz rtms compared in healthy and depressed adults
A Phillips*, A. Jannati1, C. Hinchm1, A. Stern3, P. Fried3
1University of Washington, USA, 2Berenson-Harvard Medical School, USA, 3Harvard Medical School, USA

[P1.096] Low-frequency rTMS to ventral medial frontal cortex induces depression-like behavioral and physiological state in monkeys
S Nakamura*, K. Tsutsui, Tohoku University, Japan

[P1.097] Transcranial direct current stimulation (tDCS) induces acute changes in brain metabolism
M Shaw*, N. Pawlak3, C. Choi1, N. Khan1, A. Datta3, M. Bikson4
1New York University Langone Health, USA, 2Tufts University School of Medicine, USA, 3Soterix Medical, USA, 4The City College of New York CCNY CUNY, USA

[P1.098] The effect of bilateral transcutaneous vagus nerve stimulation on heart rate variability and impulsivity
C Levin*, J. Wai, A. Perricone, D. Martinez, Columbia University Medical Center, USA
The large Type 1 error associated with responder analyses
M. van de Rui1,2, M Grey3,
1Delft University of Technology, Netherlands, 2Leiden University Medical Centre, Netherlands, 3University of East Anglia, United Kingdom

Pediatric transcranial static magnetic field stimulation to improve motor learning: The PSTIM trial
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Effect of transcranial magnetic stimulation as an enhancer of a cognitive stimulation maneuver in mild cognitive impairment patients. Case studies preliminary results
G Roque Roque1,2, J. Reyes-López1,2, J. Ricardo-Garcell3, M. López-Hidalgo1, N. Arias-García4, L. Aguilar-Fabré1,2, H. Hernández-Montiel1,2, G. Trejo-Cruz1,2, A. Brunner-Mendoza3, A. Calderón-Moctezuma1,2, S. Cañizares-Gómez5,2,
1Autonomous University of Queretaro, Mexico, 2Nervous System Clinic, Mexico, 3National Autonomous University of Mexico, Mexico, 4Universidad del Valle de México, Mexico, 5Autonomous University of Queretaro, Mexico

Patient-specific changes in motor network functional connectivity after brain stimulation in perinatal stroke
H Carlson1,2, A. Kirton1,2,
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Withdrawn

Mapping contralesional motor cortex plasticity using robotic transcranial magnetic stimulation in children with perinatal stroke
H Ku01,2,3, E. Zewdie1,2,3, A. Giutfre1,2,3, A. Kirton1,2,3,
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Alpha-synchronized stimulation of the left DLPFC in depression using real-time EEG-triggered TMS
B. Zrenner1, P. Gordon1,2, A. Kemp1, P. Belardinelli1, E. McDermott1, S. Soekadar3,1, A. Fallgatter1, C. Zrenner1, U. Ziemann1, F Müller Dahlhaus1,4, E. Zewdie1,2,3, A. Giutfre1,2,3, A. Kirton1,2,3,
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Right sided (RDLPFC) low frequency (1Hz) rTMS in the third trimester of pregnancy: A case report
J Ebbing*, D. van de Lindt
Northwest Permanente, USA

Individual differences and test-retest reliability in neural and mood effects of tACS
K Clancy*, N. Kartvelishvili, W. Li,
Florida State University, USA

Augmentation of intermittent theta-burst transcranial magnetic stimulation with the partial NMDA receptor agonist cyclodexrine: A pilot trial in the motor system of healthy individuals
J. Cole1,2,3,4, B. Selby1,2,3,4, F. MacMaster1,2,3,4,5, A. Kirton1,2,5,4, A Mc Girr1,2,3,4,
1University of Calgary, Canada, 2Hotchkiss Brain Institute, Canada, 3Mathison Centre for Mental Health Research and Education, Canada, 4N3 Non-Invasive Neurostimulation Network, Canada, 5Alberta Children’s Hospital Research Institute, Canada

Motor cortical excitability: A clinical marker for memory dysfunction in type 2 diabetes mellitus
S Zadey1,2, A. Pascual-Leone2,3, P. Fried2, S. Buss3,
1Indian Institute of Science Education and Research, India, 2Harvard Medical School, USA, 3Institut Gutman, Spain

Differential effects of transcranial magnetic stimulation and electroconvulsive stimulation on adult hippocampal neurogenesis in mice
T Zhang*, E. Guilherme, A. Kesici, F. Vila-Rodriguez, J. Snyder,
University of British Columbia, Canada

Withdrawn

Electroconvulsive stimulation increases astrocyte marker GFAP in multiple brain regions after chronic social defeat stress
M Kritzer1, W. Rosario1, J. Tharayil1, C. Lai1, P. Botros1, A. Lowell1, D. Cruz1, R. Rodriguiz1, W. Wetsel1, A. Peterchev1, D. Williamson1,2,
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Youth treatment resistant depression and TMS-EEG: Insight into neurophysiological alterations of inhibition, excitability, and connectivity in depressed youth prior to rTMS therapy.
Case study: Cognitive and mood improvement in a patient with Parkinson's disease and treatment-resistant depression following accelerated intermittent theta burst transcranial magnetic stimulation to the left dorsolateral prefrontal cortex
K Cherian*, K. Stimpson, M. Gulser, E. Cole, K. Sudheimer, J. Keller, N. Williams, Stanford University, USA

The role of gamma oscillations for working memory development in the adolescent brain
C Walker*, N. Murphy, N. Ramakrishnan, D. Fraher, R. Cho
University of Texas Health Science Center at Houston, USA, Baylor College of Medicine, USA

Dose response relationship between Near Infrared (NIR) light stimulation and functional brain activity in healthy older adults
P Sinha*, J. P. John, A. J. Woods, D. Bowers
National Institute of Mental Health and Neurosciences, India, University of Florida, USA

Galvanic Vestibular Stimulation (GVS) normalises subnetwork interactions in Parkinson's disease
A Liu*, S. Lee*, L. Kim*, S. Garg*, Z. Wang*, M. McKeown
Pacific Parkinson's Research Centre, Canada, University of British Columbia, Canada

Safety and tolerability of non-invasive neurostimulation in children
University of Calgary, Canada

Generating Custom Time Series Signals Using Recurrent Neural Network Based EEG Patterns for Transcranial Current Brain Stimulation
L Zhang*, University of Regina, Canada

A Hebbian framework for predicting modulation of synaptic plasticity with tDCS
G Kronberg*, A. Rahman, M. Bikson, L. Parra, The City College of New York, USA

Transcranial direct current stimulation allows to early detect synaptic dysfunction and memory impairment in a mouse model of Alzheimer's disease
S. Cocco, M. Rinaudo, K. Gironi, S. Barboti, C. Ripoli, M Podda*, C. Grassi, Università Cattolica del Sacro Cuore, Italy

Transcutaneous auricular vagus nerve stimulation modulates locus coeruleus activity in migraine: a preliminary fMRI study
Guangdong Provincial Hospital of Chinese Medicine, China, Massachusetts General Hospital, USA

Efficacy of transcranial direct-current stimulation on chronic insomnia
K Jung*, J. Jun*
Seoul National University, Republic of Korea, Kyungpook National University Chilgok Hospital, Republic of Korea

Repetitive transcranial magnetic stimulation (rTMS) for simultaneous treatment of comorbid somatic and psychiatric disorders
S Jääskeläinen*, T. Taivainen, M. Tram
University of Turku, Finland, Turku University Hospital, Finland

Effective factors of repetitive transcranial magnetic stimulation in major depression: Meta-(Regression) analysis.
Kansai medical university, Japan, University of Bern, Switzerland

Family Attendance at ECT
A Elias*, A. Ang, A. Schneider, K. George
The University of Melbourne, Australia, Peter James Centre, Australia

Does corticospinal excitability depend on the oscillatory phase of the pericentral m-rhythm?
Copenhagen University Hospital, Denmark, Technical University of Denmark, Denmark, Copenhagen University Hospital Bispebjerg, Denmark

A feasibility study with a novel, subcutaneous extracranial brain stimulator in a beagle model for non-invasive human neuromodulation
J. Lee, Y. Chung, S. Kim, H. Lee, J. Kang, Y Shon, D. Na
Kyung Hee University Hospital, Republic of Korea, Kangbook Samsung Medical Center,

3rd International Brain Stimulation Conference
3rd International Brain Stimulation Conference
[P1.142] Effects of paired associative stimulation asynchrony on modulating cortico-cortical connectivity
J Hernandez Pavon1,2, N. Schneider-Garcés2, J. Begnoche2, T. Raji1,2,
1Northwestern University, USA, 2Shirley Ryan AbilityLab, USA

[P1.143] Targeting rumination with combined mindful breathing and tDCS in adolescents with suicidal thoughts
K Cullen*, M. Thai, K. Lim, B. Klimes-Dougan,
University of Minnesota, USA

[P1.144] Rapid measurement of electromagnetic fields induced from transcranial electric stimulation using magnetic resonance imaging
D Shereen*, L. Parra,
City University of New York, USA

[P1.145] Brain activity and clinical outcomes in adults with depression treated with synchronized transcranial magnetic stimulation (sTMS): An exploratory study
I Cook1,2, A. Wilson1, J. Corlier1, A. Leuchter1,
1UCLA, USA, 2Los Angeles TMS Institute, USA

[P1.146] Effects of acute and subacute stimulation of ventral subthalamic nucleus on cognition and perceptual decision-making in patients with parkinson’s disease
F Girgis1, A. Prabhu1, I. Saez1, K. Scangos2, G. Gurkoff1, K. O’Connor1, J. Ditterich1, C. Carter1, J. Smucny1, K. Shahlaie1,
1UC Davis, USA, 2UCSF, USA

[P1.147] Defining the dorsal STN border using 7.0-Tesla MRI: A comparison to microelectrode recordings and lower field strength MRI
M Bol1, O. Verhagen1, M. Caan2, W. Potters2, J. Dijkstra2, V. Odekerken2, J. Dijkstra2, R. de Bie2, R. Schuurman2, P. van den Munckhof2,
1Academic Medical Center Amsterdam, Netherlands, 2Academic Medical Center, Netherlands

[P1.148] Unmet need for electroconvulsive therapy in a county-based outpatient population
M Maguire*, R. Ruppert, D. Whisenhunt, I. Lagomasino,
University of Southern California, USA

[P1.149] Localize target regions for excitatory stimulation in psychiatric disorders: Contributions from mathematical modeling
B Iravani1,2, N. Kaboodvand1,2, A. Arshamian1,
1Karolinska Institutet, Sweden, 2National Graduate School on Ageing and Health, Sweden

[P1.150] Brain morphometric correlates of ITBS clinical responses in PTSD
O Roy*, J. Levasseur-Moreau1, E. Renaud1, M. Bliodeau1, S. Fecteau2,
1Université Laval, Canada, 2CERVO Brain Research Center, Centre intégré universitaire de santé et services sociaux de la Capitale-Nationale; Faculté de médecine, Université Laval, Quebec City, QC, Canada, Canada

[P1.151] Effectiveness of twice-daily theta burst stimulation at prefrontal cortex on methamphetamine dependent
D Zhao*, T. Yuan1,2,
1Shanghai Jiao Tong University School of Medicine, China, 2Nantong University, China

[P1.152] Temporal dynamics of memory formation in the ventrolateral prefrontal cortex investigated through rTMS.
A. Medvedeva1, R. Saw2, G. Fuggetta2, G. Galli1,*
1Kingston University, United Kingdom, 2University of Roehampton, United Kingdom

[P1.153] Acute accelerated high frequency rTMS causes an immediate local and remote increase in the serotonin transporter binding index, measured with [11C]DASB
R Dockx*, K. Peremans1, D. De Bunde2, A. Van eechoud2, L. Vierick1, I. Polis1, N. Van Laeken1, G. Pauwelyn1, F. De Vos1, I. Goethals3, A. Dobbeleir3, J. Saunders1, C. Baeken1,
1Ghent University, Belgium, 2Vrije Universiteit Brussel, Belgium, 3Ghent University Hospital, Belgium

[P1.154] Effect of kHz electrical stimulation on hippocampal brain slice excitability and network dynamics
Z. Esmailpour1, M. Jackson1, G. Kronberg1, T. Zhang2, R. Esteller2, B. Hershey2, M. Bikson*, 1The City College of New York of CUNY, USA, 2Boston Scientific Neuromodulation, USA

[P1.155] From Deep Brain Stimulation in Parkinson’s Disease and treatment-resistant Depression to a new perspective to understand depression
A Silva Dos Santos1,2, M. Sales1,
1Psychiatry Department, Hospital Vila Franca de Xira, Portugal, 2Neuroscience and Pharmacology Institute, Institute of Molecular Medicine, University of Lisbon, Portugal

[P1.156] Transcranial direct current stimulation in cocaine use disorders: preliminary findings
G Martinotti1,2, A. Mili1, G. Sepede1, C. Di Natale1, M. Spano1, M. Lorusso1, G. Stigliano1, V. Mancini1, F. Di Carlo1, A. Tambelli1, L. Di Caprio1, E. Chillemi3, M. Pettorossi1, M. Lupi1, M. di
[P1.157] Prefrontal alpha Asymmetry index predicts response to repetitive transcranial magnetic stimulation
A. Yadollahpour¹, R Rostami², R. Kazemi², A. Shakeri¹,
¹Ahvaz Jundishapur University of Medical Sciences, Iran, Islamic Republic of, ²Atieh Clinical Neuroscience Center, Iran, Islamic Republic of, ³University of Tehran, Iran, Islamic Republic of

[P1.158] Single session anodal transcranial direct current stimulation alters the prefrontal and temporal alpha asymmetrical indexes in healthy individual performing a visual attention task
A. Yadollahpour¹, M. Jalilifar¹, R Rostami²,
¹Ahvaz Jundishapur University of Medical Sciences, Iran, Islamic Republic of, ²Tehran University, Iran, Islamic Republic of

[P1.159] The effects of chronic IDCS on functional brain activity and sustained attention performance
R. McKinley¹, M. Sherwood², C. Mullenger², L Mc Intire²,
¹Air Force Research Laboratory, USA, ²Infoscitex, Inc, USA

[P1.160] Magnitude of Reduction & Speed of Remission of Suicidality for Low AmPlitude Seizure Therapy (LAP-ST) Compared to Standard Right Unilateral ECT
N Youssef*, D. Ravilla, W. McCall, C. Patel, L. McCloud, M. Yassa, P. Rosenquist,
Medical College of Georgia at Augusta University, USA

[P1.161] Short-term transcutaneous non-invasive vagus nerve stimulation reduces disease activity and pro-inflammatory cytokines in rheumatoid arthritis
A. Drewes¹, C Brock², S. Rasmussen³, H. Møller³, B. Deleuran², A. Farmer⁴, M. Pfeiffer-Jensen², 
¹Aarhus university, Denmark, ²Aalborg University Hospital, Denmark, ³Aarhus University Hospital, Denmark, ⁴Staffordshire University Stoke on Trend, United Kingdom

[P3.037] Assessing the role of prefrontal and parietal cortex in working memory using combined transcranial magnetic stimulation and electroencephalography
N Rogasch¹, J. Morrow¹, N. Bailey¹, P. Fitzgerald¹, ², A. Fornito¹,
¹Monash University, Australia, ²Epworth Hospital, Australia

[P1.162] Improvement of neurological function with chronic subthreshold cortical stimulation
K Starnes*, D. Burkholder, C. Shin, J. Van Gompel, M. Stead, B. Lundstrom,
Mayo Clinic, USA

[P1.163] How Valuable is Electroconvulsive Therapy in Bipolar Patients During Inpatient Stay? Analysis of the National Inpatient Sample of the USA.
R. Patel¹, ², A Elmaadawi¹, ³, N. Youssef¹,
¹Beacon Health System, USA, ²Griffin Memorial Hospital (ODMHAS), USA, ³Indiana University School of Medicine, USA, ⁴Medical College of Georgia at Augusta University, USA

Poster Session 2
Tuesday, 26 February 2019 - 12:00-13:30
Room - Exhibitor Hall B

[P2.001] Setting the parameters to evaluate the Repetitive Transcranial Magnetic Stimulation (rTMS) studies
A. Marei*,
Brains' Clinic, Egypt

[P2.002] High-frequency rTMS for treatment of myalgic encephalitis: a case series study
W Kakuda*,
University of Health and Welfare, Japan

[P2.003] Twice-daily 2mA 20-Minutes IDCS helps in the remission of suicidal ideation in adult patients with major depression
H Da Silva Júnior¹, S. Ferreira²,
¹Neuronus Institute for Trans-disciplinary Brain Studies, Brazil, ²Federal University of Goiás, Brazil

[P2.004] New approach for brain stimulation
E Vaschillo*, B. Vaschillo, J. Buckman, M. Bates,
Rutgers University, USA

[P2.005] Transcranial Direct Current Stimulation (IDCS): Molecular and behavioral evoked alterations
E De Souza Nicolau*, H. Tenza-Ferrer, F. Donizete Rezende, N. Ferreira Nicolau, M. Falcão Barros, K. Augusto Farias de Alvarenga, L. Viana Magno, M. Romano-Silva,
Faculdade de Medicina da Universidade Federal de Minas Gerais, Brazil

[P2.006] Once daily versus twice daily theta-burst stimulation in the treatment of major depression disorder

3rd International Brain Stimulation Conference
TMS can detect abnormal synaptic plasticity associated with amyloid-beta and tau pathology in early staged dementia
T Murakami1, M. Abe1, A. Tiksnadi1, N. Kobayashi2, Y. Hashimoto1, Y. Ugawa1,1,1
1Fukushima Medical University, Japan, 2Azuma Street Clinic, Japan

Neuronal tuning: Optimizing rTMS aftereffects by selectively targeting neuronal populations via manipulation of pulse width and phase
I. Halawa, Y. Shirot, M. Sommer, W Paulus*, UMG, Germany

Robotized stereotactic assistant system for pediatric dystonia patients
Z Xie*, F. Tie, Beijing children's Hospital, China

Accelerated intermittent theta-burst stimulation suppresses suicidal ideation in patients with treatment-resistant depression
B Bentzley*, E. Cole, M. Gulser, K. Stimpson, J. Hawkins, X. Xiao, A. Schatzberg, K. Sudheimer, N. Williams, Stanford University, USA

The positive effects of HDcS on sustained attention performance under sleep deprivation conditions are consistent and repeatable
L Mc Indire*, A. McKinley2, C. Goodyear1,1
1Infoscitex, USA, 2Air Force Research Laboratory, USA

Therapeutic implications of rTMS in bipolar disorder I: A naturalistic study
N Monira*, J. Kriske, N. Donachie, D. Steinfink, TMS Neuro Solutions & Smart Neuro Health and Wellness Center, USA

Deep brain stimulation of the ventral midbrain facilitates the output to forelimb muscles via the primary motor cortex in monkeys
M Suzuki1,2,3, K. Inoue4, H. Nakagawa4, T. Isa4,2,3, M. Takada4, Y. Nishimura1,2,3,
1Tokyo Metropolitan Institute of Medical Science, Japan, 2National Institute for Physiological Sciences, Japan, 3School of Life Science, Japan, 4Kyoto University, Japan

Cathodal transcranial direct current stimulation over the primary motor cortex induces nonlinear neuroplasticity with modulations of intensity and duration
M Mosayebi Samani1,2, D. Agboada3,2, A. Jamil2, M. Kuo2, M. Nitsche4,2,
1Illmenau University of Technology, Germany, 2Leibniz Research Centre for Working Environment and Human Factors, Germany, 3Ruhr University Bochum, Germany, 4University Hospital Bergmannsheil, Germany

Cortical language function in glioma patients as measured by nrTMS
S Ille*, A. Fendel, B. Meyer, S. Krieg, Technical University of Munich, Germany

Patient-based feature optimization of a seizure detector for closed-loop stimulation
F Manzouri1,2, M. Duempelmann1, S. Heller2, P. Woias2, A. Schulze-Bonhage1,
1University Medical Center Freiburg, Germany, 2Department of Microsystems Engineering, Germany

Clinical and electrophysiological effects of two dtMS protocols in ADHD
L Bokovza1,2, U. Alyagon1,2, H. Shaley3,4, A. Zangen1,2,
1Ben Gurion University of the Negev, Israel, 2Ben Gurion University of the Negev, Israel, 3Soroka University Medical Center, Israel

Dorsomedial prefrontal rTMS as a treatment for treatment-resistant depression: A 3-arm, sham-controlled trial
K Dunlop*, J. Shen2, B. Woodside2,3, K. Feffer4,5, D. Blumberger4,2, Z. Daskalakis6,2, P. Giacobbe2,7, J. Downar2,3,
1Weill Cornell Medical College, USA, 2University of Toronto, Canada, 3University Health Network, Canada, 4Shalvata Mental Health Centre, Israel, 5Tel Aviv University, Israel, 6Centre for Addiction and Mental Health, Canada, 7Sunnybrook Health Sciences Centre, Canada

Effects of transcranial direct current stimulation (tDCS) on resting state connectivity in mesial temporal lobe epilepsy associated with hippocampal sclerosis
Z Küçük1,2, C. Ulaşoğlu Yıldız2, E. Kurt2,2, K. Eryürek2,2, E. Şahin2, N. Bebek2, B. Baykan2, T. Demiralp2,2, S. Karamürsel1,1,
1Istanbul University, Turkey, 2Istanbul University, Turkey
[P2.020] The effect of repeated iTBS on brain activities during hand movements
C Chang⁴, C. Chen⁴, Y. Huang¹,²,
¹National Central University, Taiwan, ²Chang Gung University, Taiwan

[P2.021] Simplified method of left DLPFC locating for depression treatment with TMS
M. Gabitova¹, E. Grasin¹, A Masiukova*²,¹, N. Smirnov¹,
¹Neurosoft, Russian Federation, ²Ivanovo State Medical Academy, Russian Federation

J Iddings*¹, A. Zarkou¹, E. Field-Fote¹,²,³,
¹Shepherd Center, USA, ²Emory University, USA, ³Georgia Institute of Technology, USA

[P2.023] Comparison of conventional and deep transcranial magnetic stimulation in treatment of major depressive disorder: a retrospective analysis
S. Johansen¹, J. Monterrey², M. Pimentel¹, N. Williams², K Raj*²,
¹Stanford University School of Medicine, USA, ²Stanford University, Department of Psychiatry and Behavioral Sciences, USA

[P2.024] Recovering postural control with rTMS. Case report.
G Castillo*¹,²,³, L. Tuso⁴, J. Rodriguez⁵,¹, M. Arcos Burgos⁶, S. Ramirez²,³,
¹Hospital Universitario de Mederi, Colombia, ²Hospital Infantil Universitario de San Jose, Colombia, ³Fundación Universitaria de Ciencias de la Salud, Colombia, ⁴Therapy & Technology at Home, Colombia, ⁵Fundación Cardio Infantil, Colombia, ⁶Universidad del Rosario, Colombia

[P2.025] How to collect genuine TEPs: A Graphical User Interface to control data quality in real-time
S. Parmigiani, S. Casarotto, M Fecchio*, M. Rosanova,
University of Milan, Italy

[P2.026] MMSE during ECT in late-life depression: Useful or useless?
J. Obbels¹, K. Vansteelandt¹, E Verwijk*², F. Bouchkaert¹, P. Sienaert¹,
¹University of Leuven, Belgium, ²University of Leuven, Netherlands

[P2.027] The application of transcranial direct current stimulation (tDCS) combined with traditional physical therapy to address upper limb function in chronic stroke: A case study
N. Hoseini¹, M. Eikenberry¹, H Block*²,
¹Midwestern University, USA, ²Indiana University, USA

[P2.028] Changes in somatosensory-motor connectivity associated with a visuo-proprioceptive perception task
J Mirdamadi*, C. Seigel, H. Block,
Indiana University Bloomington, USA

[P2.029] Gigantocellular neurons awaken the brain from deep pharmacologically-induced coma
S. Gao¹, A. Proekt¹,²,³, R. Nenier¹, D Calderon*¹,³, D. Pfaff¹,
¹Weill Cornell Medical College, USA, ²University of Pennsylvania, USA, ³The Rockefeller University, USA, ⁴Sorbonne Universite, France

[P2.030] Methods for paired-pulse cerebellar-M1 TMS with neuronavigation
M Dale*, W. DeVries, M. George,
Medical University of South Carolina, USA

[P2.031] Individualized functional targets optimize the effectiveness of TMS in modulation of brain activity
Y Shen*,¹, Q. Ge¹, Z. Zhu², C. Wang¹, Y. Cai¹, W. chen²,
¹Hangzhou Normal University, China, ²Zhejiang Medical University, China

[P2.032] Transcranial direct current stimulation (tDCS) of the right inferior frontal cortex (rIFC) attenuates sustained fear
M Herrmann*,¹, B. Simons¹, A. Horst¹, S. Boehme², T. Straube³, T. Polak¹,
¹University Clinics of Wuerzburg, Germany, ²University of Regensburg, Germany, ³University of Muenster, Germany

[P2.033] Electromagnetic computation and neural modelling to determine effective activation site in brain cortex
J Gomez Tames*, A. Hirata,
Nagoya Institute of Technology, Japan

[P2.034] Volumetric increases in reward circuit correlated with improvement of anticipatory anhedonia in depressive patients after electroconvulsive therapy
M Cano*¹,²,³, L. Eee¹, C. Soriano-Mas⁴,², J. Camprodon¹,
¹Harvard Medical School, USA, ²Carlos III Health Institute, Spain, ³University of Barcelona, Spain, ⁴Bellvitge University Hospital-IDIBELL, Spain, ⁵Universitat Autònoma de Barcelona, Spain, ⁶Bellvitge University Hospital, Spain

[P2.035] Transspinal direct current stimulation for pain treatment in humans. Objective proof of concept and initial clinical findings
P.036  
Four cases of procedural consolidation with electroconvulsive therapy  
R. Katz1, E. Bukanova2, M. Blessing2, C. Zou3, R. Ostroff1,  
1Yale Department of Psychiatry, USA, 2Yale Department of Anesthesiology, USA, 3Yale School of Medicine, USA

P.037  
M. Simpson*, M. Mak, The Hong Kong Polytechnic University, Hong Kong

P.038  
Motor Cortex Facilitation: An inattentiveness marker in ADHD co-occurrence in autism spectrum disorder  
E. Pedapati1, M. Mooney2, S. Wu1, J. Sweeney1, C. Erickson1, D. Gilbert1,  
1Cincinnati Children’s Hospital Medical Center, USA, 2UC Davis, USA

P.039  
Transcranial direct current stimulation of motor cortex over multiple days enhances motor learning in a complex overhand throwing task  
L. Albuquerque1, I. Munoz1, D. Lidstone1, S. Kreamer-Hope1, A. Pomerantz1, M. Pantovic1, M. Zurowski1, M. Petit1, M. Guadagnoli1, Z. Riley3, B. Poston1,  
1University of Nevada Las Vegas, USA, 2Brigham Young University, USA, 3Indiana University-Purdue University Indianapolis, USA

P.040  
Effect of low-intensity pulsed ultrasound on epileptiform discharges in a penicillin-induced epilepsy model in non-human primates  
J. Zou1,2, Y. Guo3, L. Niu4, L. Meng5, N. Pang6, H. Zheng1,  
1Chinese Academy of Sciences, China, 2Southern Medical University, China

P.041  
Bifocal high-definition tACS over early sensory regions modulates crossmodal matching: Combined evidence from EEG and tACS/behavioral studies  
J. Misselhorn1, B. Schwab, T. Schneider, A. Engel, University Medical Center, Germany

P.042  
Inhibitory effect of 20 Hz-tACS on intermittent theta burst stimulation over the primary motor cortex  
K. Ogata1, H. Nakazono, R. Hayashi, S. Tobimatsu, Kyushu University, Japan

P.043  
Comparison of effect of a single-session of high- or low-frequency rTMS on cortical excitability in people with Parkinson’s disease – a randomised placebo controlled trial  
C. Chung1,2, M. Mak1,  
1The Hong Kong Polytechnic University, Hong Kong, 2Tan Tock Seng Hospital, Singapore

P.044  
Precisely patterned optogenetic stimulation with mini-LED array and lens optics in rodent visual cortex  
A. Masuda1,2, S. Takahashi1,  
1Doshisha University, Japan, 2RIKEN, Japan

P.045  
Is transcranial direct current stimulation (tDCS) an effective adjunct to cognitive training for older adults presenting with mild cognitive impairment (MCI)?  
P. Cruz Gonzalez1, K. Fong1, T. Brown2,  
1The Hong Kong Polytechnic University, Hong Kong, 2Monash University, Australia

P.046  
cTBS increases the frequency of narrow-band gamma bursts in the contralateral pre-frontal cortex in a primate model of rTMS  
S. Lehmann1, T. Womelsdorf2, B. Cornell3,  
1Western University, Canada, 2Vanderbilt University, USA

P.047  
Effect of different frequencies in repetitive transcranial magnetic stimulation for the patients with post-stroke motor aphasia  
R. Awa1, H. Tokimura2, H. Yamanaka3, Y. Tokimura4, S. Etoh4, K. Todoroki5, K. Takasaki6, M. Atsuchi7, M. Atsuchi1,  
1Atsuchi Neurosurgical Hospital, Japan, 2Kagoshima City Hospital, Japan, 3Atsuchi Rehabilitation Hospital, Japan, 4Kagoshima University Hospital, Japan

P.048  
Primary motor cortex plasticity is enhanced by transcranial direct current stimulation in mice: Underlying molecular mechanisms and impact on motor performance  
M. Podda1, V. Longo, S. Barbati, S. Cocco, K. Gironi, A. Mattera, M. Spinelli, C. Grassi, Università Cattolica del Sacro Cuore, Italy

P.049  
Probing plasticity in the dorsolateral prefrontal cortex of patients with treatment-resistant depression  
E. Ensf1,2, J. Lissemore1, R. Zomorrod1, F. Rodriguez2, J. Downer4,5, A. Atadokht1, Z. Daskalakis1,5, D. Blumberger1,5.
The association between cross-frequency coupling and neuroplasticity via paired associative stimulation: TMS-EEG study
R Zomorrodii1, T. Rajji2, D. Blumberger3, Z. Daskalakis4,  
1Centre for Addiction and Mental Health, Temerty Centre for Therapeutic Brain Intervention, Canada, 2Centre for Addiction and Mental Health, Canada, 3University of Toronto, Canada, 4University of Toronto, Canada

The role of movement kinematics in neural chain selection during action observation
M Soriano1,2, A. Cavallo1,2, A. D’Ausilio3,2, C. Becchio1,2, L. Fadiga3,2,  
1University of Torino, Italy, 2Fondazione Istituto Italiano di Tecnologia, Italy, 3Università di Ferrara, Italy

Feeling stressed: Are emotional reactions to stress affected by transcranial brain stimulation over the prefrontal cortex? A meta-analysis
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Intracortical inhibition of the parietal cortex is associated with cognitive function in older adults: A TMS-EEG study
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Effects of electrode angle-orientation on the impact of transcranial direct current stimulation on motor cortex excitability
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Effects of deep transcranial magnetic stimulation of the medial PFC and ACC on relapse to alcohol use and related brain activity
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TMS-induced oscillations to evaluate pharmacodynamics properties of a newly developed anti-epileptic drug (XEN1101)
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Polysomnography as a biomarker to predict response to vagus nerve stimulation in depression
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QTc as a biomarker for vagus nerve stimulation (VNS) response in treatment resistant depression (TRD)
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Acute accelerated high frequency TMS augments homovanillic acid and 3,4-dihydroxyphenylacetic acid in the cerebrospinal fluid of healthy dogs
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Application of navigated transcranial magnetic stimulation to map the supplementary motor area in healthy subjects
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[P2.061] Multi-locus TMS transducer for probing orientation dependency of mechanisms in the primary motor cortex
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[P2.062] Is there evidence that electric parameters and electrode placement affect the cognitive side effects of ECT in patients with schizophrenia and schizoaffective disorder? A systematic review
M Cicek*1, W. McCal12, H. Sackeim3,4, P. Rosenquist2, N. Youssef2,
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[P2.063] Comparison between the threshold of new and conventional electrodes of artificial vision by direct optic nerve electrical stimulation (AV-DONE)
K Nishida*1,2, H. Sakaguchi2, M. Kamei3, C. Cecilia-Gonzalez4, Y. Terasawa5, R. Velez-Montoya1, T. Fujikado2, R. Sanchez-Fontan1, M. Ozawa5, H. Quiroz-Mercado6, K. Nishida2,
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[P2.064] Anodal HD- tDCS of left dIPFC together with positive emotion induction can modulate tinnitus loudness
University of São Paulo, Brazil

[P2.065] Modulating cortical plasticity using transcranial direct current stimulation an event related potential study
E Boroda*, V. Roy, K. Lim,
University of Minnesota, USA

[P2.066] Effect of cathodal transcranial direct current stimulation to the left ventrolateral prefrontal cortex on resting state default mode connectivity
H Chase*, S. Graur, M. Bertocci, M. Phillips,
University of Pittsburgh, USA

G. Lai1,2, J. Langevin1,2, R. Koek1,2, S. Krahl3,2, A. Bari1,2, J Chen1,2,
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[P2.068] Imaging brain plasticity in stroke patients with simultaneous paired associative stimulation PAS /fMRI
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Medical University of South Carolina, USA

[P2.069] Supplementary motor area low frequency repetitive transcranial magnetic stimulation in addition to left dorsolateral prefrontal cortex theta burst stimulation to enhance effectiveness of refractory depression treatment
J Davila1,2, F. Cruz2,
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[P2.070] Transcranial direct current stimulation of the human cerebellum during associative learning
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[P2.071] Deep transcranial magnetic stimulation for smoking cessation study: Partial results
B. Boura Bellini1,2, J. Ribeiro Scholz1, D. Arnaut1,2, L. Lancelote Alberto1, T. Ogawa1, M. Jacobsen Teixeira1, M. Marcolin1,3,
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[P2.072] Depressive symptoms improved by accelerated intermittent theta-burst stimulation
H Deng*, E. Cole, M. Gulser, K. Stimpson, C. Tischler, K. Sudheimer, N. Williams,
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[P2.073] Changes in dopamine release in the putamen after a single session of continuous but not intermittent theta burst stimulation
Increase of 11C-PBR28 binding after a clinical course of theta burst stimulation in non-human primates: a preliminary assessment

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Network correlates of rTMS on freezing of gait in parkinson's disease

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Brain activity changes induced by tDCS

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Multifocal transcranial direct current stimulation over prefrontal cortex diminishes risk decision making: A preliminary study

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Effects of deep transcranial magnetic stimulation on satiety and body weight control in obesity: Results of a randomized controlled study

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The transcranial static magnetic stimulation, a new non-invasive brain neuromodulatory technique: Using TMS-EEG to understand its mechanisms

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Engineering mechanosensitive neural networks in the brain

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Seizure control by deep brain stimulation: A role for white matter?

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10 Hz tACS over the prefrontal cortex facilitates phonological word decisions

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Social and clinical variables that influence longitudinal depression outcomes after brain stimulation

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Depressive symptoms reduction following intermittent theta burst stimulation over dorsomedial prefrontal cortex is related to resting-state connectivity modulation: Preliminary findings from a double blinded sham controlled trial

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Audiovisual production therapy associated with transcranial direct current stimulation (tDCS) improves naming in patients with non-fluent aphasia: A randomized, double-blind, placebo-controlled study

Non-invasive brain stimulation as an alternative treatment for ADHD: A systematic review and meta-analysis
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Assessing the focality of transcranial magnetic stimulation (TMS)
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Individual baseline performance and montage have influence when stimulating lDLPFC: A IDCS study
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The effects of transcranial alternating current stimulation on the auditory steady-state response and its association with Schizotypy
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Effect of sequential bilateral (iTBS + 1 Hz) transcranial magnetic stimulation (TMS) in patients with unipolar major refractory depression and comorbid anxiety
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Novel tools for the rapid online data acquisition of TMS corticospinal excitability
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Multimodal hippocampal imaging in patients with depression undergoing repetitive transcranial magnetic stimulation
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Cortical thickness changes following sound paired 20 Hz theta burst TMS therapy for tinnitus
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Effects of iTBS on TMS-evoked potentials and spectral perturbations over dorsolateral prefrontal cortex, posterior parietal cortex, and primary motor cortex
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Metacognitive changes after tDCS stimulation during Iowa Gambling Task (IGT) are dissociated of test performance: A randomized double-blind sham-controlled study
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Effects of rTMS at 5 Hz over lDLPFC on inhibitory control and craving in cocaine-dependent patients
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Emotional arousal and neurocircuit integrity: A concurrent TMS-fMRI investigation of state dependence
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5 Hz: The frequency of repetitive transcranial magnetic stimulation applied in two protocols, simple vs multi-sites, showing a similar clinical improvement and maintenance in Alzheimer’s disease
R Alcala Lozano1, E. Morelos-Santana1, E. Garza-Villarreal1, J. Gonzalez-Olvera1, Instituto Nacional de Psiquiatría, Mexico, University of Aarhus, Denmark

Development of closed-loop transcutaneous auricular vagus nerve stimulation (taVNS) as a neurorehabilitation tool
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Influence of theta phase on EEG synchronized TMS to the dorsolateral prefrontal cortex
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Clinical effectiveness of 5Hz transcranial magnetic stimulation applied on left dorsolateral prefrontal cortex and dorsomedial prefrontal cortex on clinical depressed patients
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Effect of Theta-Burst Stimulation Dose on Motor Cortex Excitability: A parametric evaluation of 600, 1200, 1800 pulses per session
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Functional connectivity as a tool to individualize DLPFC targeting in TMS
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Safety and efficacy of rTMS for MDD in HIV+ patients; A series of 10 consecutive patients
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Developmental trajectory of scalp to cortex distance: Implications for transcranial magnetic stimulation in adolescents with major depressive disorder
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Enhancing perception of speech in noise using electrical brain stimulation
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Prefrontal iDCS effects on appetite may depend on dopamine status: Preliminary analysis of a clinical trial
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Repetitive transcranial magnetic stimulation as a treatment for Tourette’s syndrome in children: A pilot study
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TMS in treatment of cocaine use disorder
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Duration of response is associated with treatment resistance in accelerated iTBS protocol for treatment-resistant depression
M Gulser*, E. Cole, K. Stimpson, K. Sudheimer, N. Williams, Stanford University, USA

Separability of logic and language: A TMS study
J Coetzee*, M. Monti, M. Iacoboni, A. Wu, M. Johnson, University of California, USA

Case study: Longer response to treatment with more days of aITBS, and with the addition of levodopa
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Focused ultrasound as a potential means of facilitated exosome delivery to brodmann area 25 in the treatment of refractory depression
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Non-invasive galvanic vestibular stimulation augments beta desynchronization and improves motor performance in Parkinson’s disease
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Multi-session rTMS increases the standing postural sway complexity in spinocerebellar ataxia patients.
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Adverse childhood experiences and deep brain stimulation outcomes for treatment resistant depression
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Transcranial magnetic stimulation of the midline cerebellum in a theta-burst pattern induces changes in EEG gamma frequency compared to sham
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Ultrasonic neuromodulation of pharmacologically isolated cultured neurons using a single extremely short pulse
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Towards a mechanistic understanding of brain stimulation
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Focal transcranial magnetic stimulation (TMS) of the rat brain: Coil design, c-fos mapping and electrophysiology
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Past, present and future perspective of electroconvulsive treatment in Slovakia
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Inhibition of tropomyosin-related kinase B (TrkB) reduces the benefit of cortical stimulation combined with motor rehabilitation in experimental stroke
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Deep brain stimulation of the bed nucleus of the stria terminalis improves cardiac-autonomic control in a woman with severe obsessive compulsive disorder
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Repeated sessions of transcranial direct current stimulation (tDCS) with vertical jump training improves vertical jump performance in elite athletes
A Cates*1,2, R. Lin2, A. Mayberry1, R. Clark2, D. Chao2, T. Taylor3, J. Stray-Gundersen3, B. Wingeier2, 1Northwestern University, USA, 2Halo Neuroscience, USA, 3United States Ski and Snowboard Association, USA

The dynamic modulation of inter-hemispheric inhibition during bimanual grip force control
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Behavioral and neural assessment of high-frequency stimulation of the bed nucleus of the stria terminalis in a rat model of anxiety
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Age-dependent effect of transcranial alternating current stimulation (tACS) on motor skill consolidation
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Stereotactic ablative surgery versus deep brain stimulation for treatment-resistant depression: A review of clinical efficacy
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The influence of ongoing μ-oscillation phase on the induction of LTD-like plasticity with 1 Hz rTMS
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Generation 2 kilohertz spinal cord stimulation (kHz-SCS) bioheat multi-physics model
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Fully closed-loop neuromodulation approach in real-time
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Could tDCS modulate bilingual reading?
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Long-term potentiation like effects induced by quadripulse magnetic stimulation in Parkinson’s disease patients “off” and “on” medication states
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Paired-pulse TMS mapping based on individual sulci shape, reveals corticomotor representations underpinning I-wave facilitation
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Do inter-individual variations in electric fields affect motor cortical excitability changes following anodal tDCS?
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Resting-state fMRI biomarkers and effects of transcranial magnetic stimulation in treatment-refractory depression
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Efficacy and safety of repetitive transcranial magnetic stimulation for weight loss in obesity
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The effects of repetitive transcranial magnetic stimulation on functional brain connectivity in obesity
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Preliminary work toward creating a desktop-portable device for quickly measuring brain level of consciousness
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Should cardiac pace-makers be an exclusion criteria for tDCS?
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Effects of transcranial direct current stimulation over the right posterior parietal cortex on visual attention in young healthy adults
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Theta stimulation to treat cognitive dysfunction in rodent models of neurologic disorders
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Towards modeling the influence of transcranial direct current stimulation on neuronal response
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ECS-induced neurogenesis and cognitive side effects
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Dimensional biotype-based TMS personalization
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Using tDCS and tACS to understand the role of dorsal processing and theta signals in word recognition and natural reading
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Elimination of peripheral auditory pathway activation does not affect motor responses from ultrasound neuromodulation
M. Mohammadjavadi1, P. Ye, A. Xia, J. Brown, G. Popekka, K. Butts Pauly, Stanford University, USA

Optical inactivation of the anterior cingulate cortex modulate descending pain pathway in a rat model of trigeminal neuropathic pain created via chronic constriction injury of the infraorbital nerve
H. Moon1,2, Y. Park1,2, E. KC1, K. So1,
1Chungbuk National University, Republic of Korea, 2Chungbuk National University Hospital, Republic of Korea,

Transcranial direct current stimulation fails to affect criterion shifting during recognition memory
E. Layher1, T. Santander, M. Miller,
University of Califomia, USA

Subcortical grey matter changes may be not essential for the antipsychotic effect of electronic or magnetic seizure therapy
J. Jiang1, B. Zhang1, J. Li2, Y. Xu1, J. Sheng1, D. Liu1, X. Guo1, Y. Jia1, T. Zhang1, Q. Li2, J. Wang1, C. Li1,
1Shanghai Jiao Tong University School of Medicine, China, 2Tongji University, China

Period and amplitude control stimulating pulses energies
A. Rabinovitch1, D. Braunstein2, I. Aviram3, R. Thieberger3, Y. Biton3,
1Physics Dept., Ben-Gurion University, Israel, 2Sami Shamoon College of Engineering, Israel, 3Ben-Gurion University, Israel
The management of anxiety, insomnia and depression with cranial electrotherapy stimulation
J Marksberry*, Electromedical Products International Inc, USA

A national longitudinal study for regional variation of inpatient ECT utilization from 4411 hospitals across the United States
R. Patel1, V. Sreeam2, T. Thakur3, R. Bachu4, N Youssef5,
1Griffin Memorial Hospital, USA, 2Harlem Hospital, USA, 3State University of New York (SUNY) Upstate, USA, 4Providence University, USA, 5Augusta University, USA

The theta/beta1 value in right frontolateral and mid-temporal cortices could act as visual attention biomarker in healthy individuals
A. Yadollahpour1, F. Riahi1, S. Jaberzade2, R Rostami3,
1Ahvaz Jundishapur University of Medical Sciences, Iran, Islamic Republic of, 2Monash University, Australia, 3Tehran University, Iran, Islamic Republic of

Single session anodal, cathodal and placebo bifrontal tDCS for treatment of intractable chronic tinnitus: A randomized controlled clinical trial
A. Yadollahpour1, S. Rashidi1, S. Jaberzade2, R Rostami3,
1Ahvaz Jundishapur University of Medical Sciences, Iran, Islamic Republic of, 2Monash University, Australia, 3Tehran University, Iran, Islamic Republic of

Numerical evaluation of the induced electric field in techniques of transcranial brain stimulation: influence of the anatomic model and skin conductivity.
A. Paffi1, M Colella1*, M. Mambrini1, F. Apollonio1, V. De Santis2, M. Liberti1,
1Sapienza University of Rome, Italy, 2Università degli Studi dell’Aquila, Italy

Distinct symptom-specific treatment targets for antidepressant neuromodulation
S Siddiqi1, S. Taylor2, D. Cooke1, M. George3, A. Pascual-Leone1, M. Fox1,
1Harvard Medical School, Berenson-Allen Center for Noninvasive Brain Stimulation, USA, 2University of Michigan, USA, 3Medical University of South Carolina, USA

Functional connectivity changes with targeted rTMS of the dorsal attention network in TBI-associated depression
S Siddiqi1,2,3, N. Trapp1, C. Hacker2, S. Kandala2, E. Leuthardt2, A. Carter2, D. Brody3,
1Harvard Medical School, Berenson-Allen Center for Noninvasive Brain Stimulation, USA, 2Washington University School of Medicine, USA, 3Center for Neuroscience & Regenerative Medicine, USUHS, USA, 4University of Iowa, USA

The Effects of high frequency repetitive transcranial magnetic stimulation on negative symptoms of schizophrenia: Findings from a randomized, double-blind, sham-controlled trial
S Singh4, N. Kumar, R. Verma, A. Nehra, S. Kumar,
All India Institute of Medical Sciences, India

Deep brain stimulation: first trial in treatment-resistant schizophrenia
I Corripio1,2, E. Pomarol-Clotet1, P. McKenna3, S. Sarró2, A. Roldan1,
1Sant Pau Hospital, Spain, 2FIDMAG-Germanes Hospitalaries, Spain, 3FIDMAG, Spain

Case report: Improved rTMS efficacy after fMRI localizes DLPFC target to non-dominant hemisphere
J Lovine1, N. Spivak1,2, S. Jordan2,3, K. Mahdavi1, J. Duncan3, S. Becerra1, H. Packham1, N. Nicodemus1, S. Pereles1, M. Whitney1, A. Bystrisky1, T. Kuhn1,2, M. Mamoun1,2,3,1,2,3,1
1Neurological Associates of West Los Angeles, USA, 2UCLA, USA, 3CNS Health, USA, 4RAD Alliance, USA

Case study: Comparison of MRI techniques for demonstrating successful ultrasound targeting: BOLD Compared with ASL functional imaging
S. Becerra1, J Duncan1, S. Jordan1,2,3, J. Lovine2, N. Spivak2, N. Nicodemus2, H. Packham2, S. Pereles1, M. Whitney4, A. Bystrisky3, K. Mahdavi1, T. Kuhn1, M. Mamoun2,3,1
1Synaptec Network, USA, 2Neurological Associates Pain Intervention, USA, 3UCLA, USA, 4Rad Alliance, USA

Anodal tDCS improves attentional control in older adults.
C Hanley*, A. Tales,
Swansea University, United Kingdom
Egocentric processing in the roll plane and dorsal parietal cortex: a TMS-ERP study of the subjective visual vertical

L Willacker*1,2, J. Dowsset1,1, M. Dieterich1,1,2,3, P. Taylor4,1,2,
1Ludwig-Maximilians-University, Germany, 2LMU, Germany, 3Munich Cluster for Systems Neurology, Germany, 4University Hospital, Ludwig-Maximilians-University, Germany

Sensorimotor cortices casually contribute to auditory foreign language vocabulary translation following multisensory learning

B Mathias*1,2, A. Klingebiel2, G. Hartwigs2, L. Sureth2, M. Macedonia2,3, K. Mayer4, K. von Kriegstein1,2,
1Technical University Dresden, Germany, 2Max Planck Institute for Human Cognitive and Brain Sciences, Germany, 3Johannes Kepler University Linz, Austria, 4University of Münster, Germany

Stanford accelerated intelligent neuromodulation therapy for treatment-resistant depression (SAINT-TRD)

E Cole*, M. Gulser, K. Stimpson, B. Bentzley, J. Hawkins, X. Xiao, A. Schatzberg, K. Sudheimer, N. Williams,
Stanford University, USA

Accelerated intermittent theta-burst stimulation for treatment-resistant depression in patients with alcohol-use disorder.

E Cole*, H. Deng, W. Tate, C. Tischler, K. Stimpson, B. Bentzley, A. Schatzberg, K. Sanborn, N. Williams,
Stanford University, USA

A randomized controlled study of transcranial direct current stimulation in treatment of generalized anxiety disorder

Y Lin1, C. Zhang2, Y. Wang1,
1Capital Medical University, China, 2Pinggu Hospital, China

Symptoms improvement in a senile depression patient using ECT with ketamine anesthesia in the absence of effective convulsion pattern

N Aoki*,
Kansai Medical University, Japan

Rapid theta burst transcranial magnetic stimulation in a hospitalized patient with schizophrenia post-suicide attempt is both safe and effective

K Stimpson*, D. DeSouza, K. Sudheimer, N. Williams,
Stanford University, USA

Correlation of language-eloquent white matter pathways with the course of language function in glioma patients

S Ille*, L. Engel, B. Meyer, S. Krieg,
Technical University of Munich, Germany

Computational model for the modulation of speech-in-noise comprehension through transcranial electrical stimulation

M Kegler*, T. Reichenbach,
Imperial College London, United Kingdom

Combining transcutaneous vagus nerve stimulation and upper-limb robotic rehabilitation in chronic stroke patients

F Capone1, S. Micciniinilli1, G. Pellegrino2, L. Zollo1, E. Guglielmelli1, S. Sterzi1, V. Di Lazzaro3,
1Università Campus Bio-Medico, Italy, 2San Camillo Hospital IRCCS, Italy, 3Unit of Neurology, Neurophysiology, Neurobiology, Department of Medicine, Università Campus Bio-Medico di Roma, Italy

Inferior frontal cortex as a key generator of mismatch negativity: A repetitive transcranial magnetic stimulation study

Y Lin1,2, M. Hsieh1, S. Wang3, F. Lin4,
1National Taiwan University Hospital, Taiwan, 2National Taiwan University, Taiwan, 3National Health Research Institutes, Taiwan, 4Department of Biomedical Engineering, National Taiwan University, Taiwan

The effects of neuromuscular electrical stimulation during repetitive transcranial magnetic stimulation before repetitive facilitation exercise on the hemiparetic hand in chronic stroke patients

Kagoshima University, Japan

Defining brain connectivity using time series similarity measures: An application to corticocortical evoked potentials
[P3.015] Realistic sham TMS
E. Grasin1, I. Loginov1, A. Masliukova1,2, N. Smirnov1,
1Neurosoft, Russian Federation, 2Ivanovo State Medical Academy, Russian Federation

A Schindler1,2, J. Meabon1,2, B. Baskin3, E. Cooper1, M. Yagi1, B. Simon3, E. Peskind1,2, P. Phillips2, D. Cook1,2,
1VA Puget Sound, USA, 2University of Washington, USA, 3electroCore, Inc, USA

[P3.017] The impact of chronotypes and time of the day on IDCS-induced motor cortex plasticity and cortical excitability
M Salehinejad1,2, M. Kuo1, M. Nitsche1,3,
1Leibniz Research Centre for Working Environment and Human Factors, Germany, 2Ruhr-University Bochum, Germany, 3University Medical Hospital, Germany

[P3.018] Transcranial magnetic stimulation for diplopia in a patient with spinocerebellar ataxia type 6: A case report
K Kawamura*, S. Etoh, M. Shimodozono,
Kagoshima University, Japan

[P3.019] Evidence of asymmetrical spatial distributions of motor evoked potentials between dominant and non-dominant hands
V Souza1,2, O. Botaf1, M. Garcia1,3,4,
1Universidade de São Paulo, Brazil, 2Aalto University School of Science, Finland, 3Cidade Universitária, Brazil, 4Federal university of juiz de fora, Brazil

[P3.020] Individual differences in state anxiety influence the effect of iTBS over the left dorsolateral prefrontal cortex on HPA sensitiviti
S. De Witte1, M. M. Pulopulos2, M. Vanderhasselt3, R. De Raedt1, J. Schietecatte1, E. Anckaert1, C. Baeken3,
1University of Ghent, Belgium, 2University Ghent, Belgium, 3Ghent University, Belgium

[P3.021] Absence of antidepressive effects of transcranial pulsed electromagnetic fields for treatment resistant depression – a replication study
S Van Belkum1,2, M. de Boer1, E. Opmeer1, A. Aleman1, R. Schoevers1,
1University of Groningen, Netherlands, 2University of Groningen, University Medical Center Groningen. Department of Neuroscience, The Netherlands., Netherlands

[P3.022] High definition transcranial alternating current stimulation of the right fusiform cortex improves visual associative memory
S Lang1,2, L. Gan1, T. Alrazi1, O. Monchi2,1,
1University of Calgary, Canada, 2University of Calgary, Canada

[P3.023] Research of paired synchronous electromagnetic stimulation over single brain region for human cortical excitability: A new neuromodulation strategy
T Han1,2, Y. Lin1,2, C. Liu1,2, Z. Xu1,2, Y. Wang1,2,
1Capital Medical University, China, 2Beijing Key Laboratory of Neuromodulation, China

[P3.024] Safety and feasibility of transcranial direct current stimulation for patients with post-polio syndrome
Y Matsushima*, A. Hachisuka, H. Itoh, K. Sugimoto, S. Saeki,
University of occupational and environmental health, Japan

[P3.025] Sleep-like bistability, loss of causality and complexity in the cerebral cortex of unresponsive wakefulness syndrome patients
M Fecchio1, M. Rosanova1, S. Casarotto1, S. Sarasso1, A. Girardi Casali2, A. Pigorini1, A. Comanducci1, F. Seregni3, G. Devallé4, G. Citterio5, O. Bodart6, M. Boly7, O. Gossier8, S. Laureys6, M. Massimini1,
1University of Milan, Italy, 2Universidade Federal de São Paulo, Brazil, 3Cambridge University Hospital NHS Foundation Trust, United Kingdom, 4RCCS Fondazione Don Gnocchi, Italy, 5University of Milan Bicocca, Italy, 6University and University Hospital of Liège, Belgium, 7University of Wisconsin, USA

[P3.026] Higher efficacy and less inter-individual variability in QPS than TBS: head to head comparison study
A Tiksnadi1,2, T. Murakami1, W. Wiratman1,2, Y. Ugawa1,1,
1Fukushima Medical University, Japan, 2Medicine Universitas Indonesia, Indonesia

[P3.027] Remission from depression and tms over left DLPFC share the same network connectivity changes
M Tik*, M. Woletz1, G. Kranz1, D. Pfabigan2, N. Geissberger1, R. Sladky1, C. Kraus1, B. Auer2, T.
[P3.028] Long-term effects of deep brain stimulation of the ventral anterior limb of the internal capsule for obsessive compulsive disorder
I Graat*1, R. Mocking1, M. Figue2, N. Vulink1, P. de Koning1, P. Ooms1, M. Mantione1, P. van den Munchkopf1, R. Schuurman1, D. Denys1,
1Amsterdam UMC, Netherlands, 2Mount Sinai Hospital, USA

[P3.029] Is comorbid autism or bipolar disorder a contra-indication for DBS patients with OCD?
I Graat*, G. van Rooijen, R. Mocking, P. de Koning, D. Denys, Amsterdam UMC (AMC), Netherlands

[P3.030] Decreased functional connectivity between frontal and motor cortex in tourette syndrome
S Wu*, E. Pedapati1, A. Roeckner6, D. Huddleston1, H. Jackson5, D. Gilbert1,
1Cincinnati Children’s Hospital Medical Center, USA, 2Emory University, USA

[P3.031] A case series exploring the effect of twenty sessions of repetitive transcranial magnetic stimulation (rTMS) on cannabis use and craving
G Sahlem*, M. Caruso1, R. Malcolm1, M. George1,2, A. McRae-Clark1,2,
1Medical University of South Carolina, USA, 2Ralph H. Johnson VA Medical Center, USA

[P3.032] The effect of continuous theta-burst stimulation on language interference in bilinguals
A Ware*, J. Lum, Deakin University, Australia

[P3.033] The effect of number of electrodes in the multi-array tDCS - A computational study
C Im*, H. Seo, S. Jun, Gwangju Institute of science and technology, Republic of Korea

[P3.034] Transcranial pulsed ultrasound regulates body temperature in mice
T Guo*, L. Qi, L. Niu1, L. Meng1, H. Zheng1,
1Chinese Academy of Sciences, China, 2Northeastern University, China

[P3.035] The N100 TEP as a neural predictor of motor learning: A TMS-EEG study
M Taga*, A. Curci1, I. Latali2, D. Turner1,
1University of East London, United Kingdom, 2University of East London, Italy

[P3.036] Impact of concurrent task performance on transcranial direct current stimulation (tDCS)-induced changes in cortical physiology and working memory
A Hill*, N. Rogasch2, P. Fitzgerald1, K. Hoy1,
1Monash Alfred Psychiatry Research Centre, Australia, 2Monash University, Australia

[P3.037] Moved to Poster session 1

[P3.038] Noradrenergic effects on cortical excitability - a study with noninvasive brain stimulation in humans
H. Kuo1, W. Paulus2, G. Batsikadze2, A. Jamil1, M. Nitsche1,3, M Kuo1,
1Leibniz Research Centre for Working Environment and Human Factors, Germany, 2Georg-August-University, Germany, 3Rhu Universitat, Germany

[P3.039] Propagation of TMS pulses versus functional brain connectivity
D Klooster1,2, J. Vinek1, P. van Mierlo5, P. Boon1,2,3, D. Cooke6, T. Gedankien6, A. Roberts6, P. Boucher6, A. Pascual-Leone7,8, M. Fox8,6,7, M. Shafi6,7,
1Academic Center for Epileptology Kempenhaeghe, Netherlands, 2University Hospital Ghent, Belgium, 3Eindhoven University of Technology, Netherlands, 4Utrecht University, Netherlands, 5Ghent University, Belgium, 6Berenson-Allen Center for Noninvasive Brain Stimulation, USA, 7Harvard Medical School, USA, 8Massachusetts General Hospital, USA

[P3.040] A causal role of the frontal eye field in visual stability during optokinetic stimulation: TMS-EEG evidence
A Mastropasqua*, J. Dowsett1, M. Dieterich1,2, P. Taylor1,
1Ludwig-Maximilians-University, Germany, 2SyNergy – Munich Cluster for Systems Neurology, Germany

[P3.041] Inducing neuroplasticity in the primary visual cortex using paired associative stimulation
F Yavari*, L. Marciale Tchuendem1, M. A. Nitsche2,3, M. Kuo1,
1Leibniz Research Centre for Working Environment and Human Factors, Germany, 2University Medical Medical Hospital Bergmannsheil, Germany

M Dumoulin*, G. Liberati1, A. Mouraux1, R. El Tahry1,2,
1Université Catholique de Louvain, Belgium, 2Saint-Luc University Hospital, Belgium

[P3.043] Transcranial direct current stimulation affects auditory cortex plasticity in normal-hearing and noise-exposed rats

3rd International Brain Stimulation Conference
M Podda*, F. Paciello, S. Cocco, R. Rolesi, D. Troiani, A. Fetonli, G. Paludetti, C. Grassi, University Cattolica del Sacro Cuore, Italy

[P3.044] The use of electroconvulsive therapy in dementia with behavioral disturbances
R Ostroff*, R. Katz, J. Taylor, Yale Department of Psychiatry, USA

[P3.045] An investigation of the feasibility and limitations of epicranial current stimulation using concentric-ring electrodes
A Khatoun*, B. Asamoah, M. Mc Laughlin, KU Leuven, Belgium

[P3.046] Closed-loop application of IDCS to promote responsiveness in patients with disorders of consciousness
G Martens*, A. Barra1, M. Carrière1, A. Soria-Frisch2, G. Ruffini2, D. Ibáñez2, A. Rojas2, S. Laureys1, A. Thibaut1, 1University Hospital of Liege, Belgium, 2Starlab Barcelona, Spain

[P3.047] Examining the effect of transcranial direct current stimulation in the arc pointing task
E Kaminski*1,2, M. Hoff2, C. Steele2, B. Sehm2, A. Villringer2, P. Ragert1,2, 1University of Leipzig, Germany, 2Max Planck Institute for Human Cognitive and Brain Sciences, Germany

[P3.048] Feasibility of using fitness activity tracker as complement tool to symptoms rating scale in rTMS treatment
J Miron*1,2, C. Longpré-Poirier1, V. Desbeaumes Jodoin1, P. Lespérance1, 1Centre Hospitalier Universitaire de Montréal, Canada, 2University of Toronto, Canada

[P3.049] The vestibulomyogenic response in the upper and lower limbs prior to movement onset
M Kennefick*, J. Burma, P. van Donkelaar, C. McNeil, B. Dalton, University of British Columbia, Canada

[P3.050] Multiple sessions of cathodal tsDCS alter phrenic motoneurones output and spontaneous breathing pattern
M Nièra*, S. Mehdi, T. Similowski, J. Lamy, Sorbonne Université, France

[P3.051] Intra- and inter-network effects of navigated transcranial magnetic stimulation using low- and high-frequency pulse application to the dorsolateral prefrontal cortex – a combined rTMS-fMRI approach
N. Sollmann1, H. Zhang2, G. Castrillón1, K. Kurcyus1, B. Meyer2, C. Zimmer1, S. Krieg2, S. Ille*3, 1Department of Diagnostic and Interventional Neuroradiology, Klinikum rechts der Isar, Technische Universität München, Germany, 2Department of Neurosurgery, Klinikum rechts der Isar, Technische Universität München, Germany, 3Technical University of Munich, Germany

[P3.052] Day-to-day variations in physical activity patterns affect corticospinal excitability on the following day
M Ekblom*1,2, E. Bojsen-Möller1, O. Tarassova1, Ö. Ekblom1, 1The Swedish School of Sport and Health Sciences, Sweden, 2Karolinska Institutet, Sweden

[P3.053] Nine-year prospective safety and effectiveness outcomes from the long-term treatment trial of the RNS® system
M Morrell*1,2, R. Investigators3, 1NeuroPace, Inc., USA, 2Stanford University Medical Center, USA, 3Various, USA

[P3.054] Excitability changes induced in the motor cortex by transcranial ultrasound stimulation
B Gibson*, J. Sanguinetti1,2, T. Mullins1, S. Salazar1, L. Buchman1, C. Cutter1, E. Klein1, D. Aragon1, M. Heinrich1, B. Badran2,3,4, A. Yu2, V. Clark1,3, 1University of New Mexico, USA, 2Army Research Laboratory, USA, 3City College of New York, USA, 4Medical University of South Carolina, USA, 5The Mind Research Network, USA

[P3.055] Transcranial ultrasound stimulation and the effect on inhibition as assessed by a stop signal task
T. Mullins1, J. Sanguinetti1,2, B Gibson*1, M. Heinrich1, D. Aragon1, J. Spinks1, A. Jones1, B. Robert1, M. Lamphere1, A. Yu2, V. Clark1,3, 1Psychology Clinical Neuroscience Center, University of New Mexico, USA, 2Army Research Laboratory, Aberdeen Proving Ground, USA, 3The Mind Research Network, USA

S Dhalivall*, B. Meek, M. Modirrousta, University of Manitoba, Canada

[P3.057] Challenge to appropriate use of rTMS for major depression in Japan
M Nakamura*1,2, S. Kito3, K. Shinosaki4, M. Mimura5, M. Mizuno6, J. for rTMS appropriate use document7, 1Showa University, Japan, 2Kanagawa Psychiatric Center, Japan, 3Jikei University, Japan,
[P3.058] Therapeutic potential of multiple sessional intermittent theta burst stimulation over bilateral posterior superior temporal sulcus on children and adolescents with autism spectrum disorder
H Ni*1, H. Lin2, Y. Huang1,
1Chang Gung Memorial Hospital, Taiwan, 2National Taiwan University Hospital, Taiwan

[P3.059] Temporary changes in the power of gamma band oscillations in the auditory cortex with transcranial alternating current stimulation (tACS) using GTEN hardware
E Weik*1,2, C. Tipper1,2, J. Khangura1,2, J. Krotez1,2, M. Roes1,2, T. Woodward1,2,
1University of British Columbia, Canada, 2BC Children's Hospital Research Institute, Canada

[P3.060] Interindividual differences in both resting-state intracortical and interhemispheric inhibition predicts individual differences in relevant motor performance
J He*, I. Fuelscher1, J. Coxon2, W. Teo3, P. Barhoumi1, P. Enticott3, N. Chowdhury4, C. Hyde5,
1Cognitive Neuroscience Unit, School of Psychology, Deakin University, Geelong, Australia, Australia,
2School of Psychological Sciences and Monash Institute of Cognitive and Clinical Neuroscience, Monash University, Melbourne, Australia, Australia,
3Deakin University, Australia, Australia,
4The University of Sydney, Australia,
5Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong Australia, Australia

[P3.061] Side effects trajectories in rTMS treatment for depression: 10 Hz vs. intermittent theta-burst stimulation
A Humaira*1, S. Gao1, L. Wu1, J. Downar2, D. Blumberger3, F. Vila-Rodriguez1,
1University of British Columbia, Canada, 2University of Toronto, Canada, 3Department of Psychiatry, Centre for Addiction and Mental Health, University of Toronto, Canada

A Moffa*1, D. Martin1, A. Brunoni2,3, A. Alonzo1, D. Blumberger4, D. Bennabi5, Z. Daskalakis4, F. Fregni6, F. Padberg3, U. Palm2, B. Sampaio-Junior2, C. Loo1,
1University of New South Wales, Australia, 2Universidade de Sao Paulo, Brazil, 3Ludwig-Maximilians-University, Germany, 4University of Toronto, Canada, 5University Hospital of Besancon, France, 6Harvard Medical School, USA

[P3.063] Altered cortical blood flow during sonication of high-order thalamus using low intensity focused ultrasound pulsation
J Cain*, M. Monti,
University of California, USA

[P3.064] Integration of prefrontal transcranial direct current stimulation with cognitive training for treatment of memory dysfunction in epilepsy
A Roy*, E. Boroda, E. Waldron, K. Lim, T. Henry,
University of Minnesota, USA

[P3.065] Dosage effects of tDCS on working memory and neurophysiological outcomes
S Nikolin*, D. Martin, C. Loo, T. Boonstra,
University of New South Wales, Australia

[P3.066] The effects of DC electrical stimulation to visual cortex and retina on neural responses
Y Terasawa*, Y. Nakano,
Artificial Vision Institute, Japan

[P3.067] Investigating the effects of tDCS in autism spectrum disorders
T Penton*, M. Banissy1, C. Catmur1, G. Bird3,1,
1King's College London, United Kingdom, 2Goldsmiths University, United Kingdom, 3Oxford University, United Kingdom

[P3.068] Neural effects of continuous theta-burst stimulation on single neurons in macaque parietal cortex
M Romero*, P. Janssen, M. Davare,
KU Leuven, Belgium

[P3.069] Cerebellar low-intensity focused ultrasound stimulation can normalize asymmetrical hemispheric delta power after mouse ischemic stroke
H. Baek1,2, A. Sariev1,2, S. Dong3, S. Royer1,2, H Kim*1,2,
1Korea Institute of Science and Technology, Republic of Korea, 2Korea University of Science and Technology, Republic of Korea, 3Sookmyung women's university, Republic of Korea

[P3.070] Pre-treatment predictors of cognitive side effects in depressed patients treated with ECT: A systematic review
M. van Kessel1, J. van der Vlugt1, H. Spaans2, J. Murre3, E Verwijk*3,3,
1Delta; Antes., Netherlands, 2Pamassia, Netherlands, 3University of Amsterdam, Netherlands
[P3.071] EEG recording during online modulation of brain activity by transcranial random noise stimulation
T Zama*1, K. Kitajo1,2,
1RIKEN Center for Brain Science, Japan, 2National Institute for Physiological Sciences, Japan

[P3.072] Putting one foot in front of the other: Using TMS to advance understanding of lower extremity motor control
J Kindred*1,2, E. Wonselter3,4, C. Charalambous5, M. Bowden6,2,7,
1Ralph H. Johnson Veterans’s Affairs Medical Center, USA, 2Department of Health Sciences and Research, Medical University of South Carolina, Charleston, SC, USA, 3High Point University, USA, 4New York University School of Medicine, USA, 5University of Southern California, USA, 6Ralph H. Johnson Veterans’s Affairs Medical Center, Charleston, SC, USA

[P3.073] Transcranial Magnetic Stimulation (TMS) induced Motor Evoked Potential (MEP) in chronic pain patients
S Nanda*, S. Arya, V. Tiwari, V. Srikumar, U. Kumar, R. Bhatia, All India Institute of Medical Sciences, India

[P3.074] Concurrent tDCS-NIRS-MEG: Insights from a technical pilot
S Esterg1, L. Abbot1, L. Magazzini2, D. McGonigle3,
1Cardiff University, United Kingdom, 2CUBRIC, School of Psychology, Cardiff University, United Kingdom

[P3.075] State-dependent effects of transcranial oscillatory currents on the motor system during action observation
M Feurra*1,2, E. Blagoveshchensky1, V. Nikulin3, M. Nazarova1, A. Lebedeva4, D. Pozdeeva1, M. Yurevich1, S. Rossi5,
1National Research University Higher School of Economics, Russian Federation, 2Higher School of Economics, Russian Federation, 3Max Planck Institute for Human Cognitive and Brain Sciences, Germany, 4University College London, United Kingdom, 5University of Siena, Italy

[P3.076] Influence of tDCS on emotional and attentional information processing
B. Sutcu4, Z Kucuk5, Z. Tarman1, B. Metin1, E. Metin3, B. Sari1,
1Uskudar University, Turkey, 2Istinye University, Turkey, 3Bogazici University, Turkey

[P3.077] Treatment resistant depression with partial effect of electroconvulsive treatment achieving long lasting remission with dorsomedial prefrontal intermittent theta-burst stimulation – a case report
R Bodén*, J. Bengtsson, E. Thörnblom, W. Struckmann, J. Persson, Uppsala University, Sweden

[P3.078] ECT seizure parameter modulation with bupropion: A pilot study
N Mischel1, G. Rakesh2, G. Falcone-Gunderson1,2, A. Anderson1, D. Copeland4, S. Szabo2,1, R. Weiner1,
1Duke University Medical Center, USA, 2Durham VA Medical Center, USA, 3Duke University, USA, 4Duke University Medical Center Department of Psychiatry, USA

[P3.079] Electrophysiological brain abnormalities in depression: Microstate analysis on resting high-density EEG
A Damborska1,2, M. Tomescu1, R. Barteczek2, E. Honzírková2, D. Drobsis2, C. Michel1,
1University of Geneva, Switzerland, 2Masaryk University, Czech Republic

W Struckmann*, J. Persson, M. Gingnell, R. Bodén, Uppsala University, Sweden

[P3.081] Optimized tACS parameters for modulation of alpha oscillation
B P De Koninck*1, S. Guay1, L. Proulx-Begin1, I. Massé1,2, L. De Beaumont1,2,
1University of Montreal, Canada, 2Research Center of Hôpital du Sacré-Cœur de Montréal, Canada

[P3.082] Theta-burst stimulation and prefrontal regulation of cardiovascular autonomic outputs: The role of state anxiety
T Poppa Fioretti1, S. de Witte2, M. Vanderhasselt2, A. Bechara1, C. Baeken2,3,
1University of Southern California, USA, 2University of Ghent, Belgium, 3UZ Brussel, Belgium

[P3.083] Sound paired 20 Hz theta burst transcranial magnetic stimulation treatment of broadband tinnitus
W Stubeman*, B. Zarrabi, M. Nable, A. Ramones, M. Gencosmanoglu, R. Khairkhah, Stubeman Brain Stimulation Institute, USA

[P3.084] Different input-output properties throughout the cortex as revealed by TMS-EEG
E Raffin1,2,3, S. Harque1,2,3, B. Passero1,2, H. Siebner1,7, O. David2,5,
1Centre de Neuroprosthetics (CNP) Swiss Federal Institute of Technology (EPFL), Switzerland, 2Grenoble Institut des Neurosciences, France, 3Copenhagen University Hospital Hvidovre, Denmark, 4CNRS, UMR5105, Laboratoire Psychologie et NeuroCognition, LPNC, Grenoble,
**P3.085** Effect of repetitive transcranial magnetic stimulation on aggressive impulsive behavior in subjects with bpd in a of social exclusion paradigm
A. Rodríguez Delgado, E. Morelos Santana, A. Torres Marcial, I. Arango de Montis, E. Miranda Terres, J Gonzalez Olvera*
Instituto Nacional de Psiquiatria Ramon de la Fuente, Mexico

**P3.086** Divergent effects on cortical excitability observed in healthy older adults during active voluntary contraction following motor cortex tBS
M Sundman1,2, K. Lim1, J. Mizell1, V. Ton That1, W. Mennie1, C. Ugonna1, M. Lindley1, A. Fuglevand1, N. Chen1, R. Wilson1, Y. Huang2, Y. Chou1
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**P3.087** Use of human invasive SEEG and non-invasive EEG recordings in vivo towards tDCS dose individualization
P Chhatbar*1, J. Halford1, W. Vandergriff1, Y. Zhang2, W. Feng1, M. George1,3, S. Kautz1,3
1Medical University of South Carolina, USA, 2University of Houston, USA, 3Ralph H. Johnson VA Medical Center, USA

**P3.088** What keeps us from ticking?
J Müller*, N. Freundlieb
University Clinic of Hamburg Eppendorf, Germany

**P3.089** Efficacy, safety and tolerability of repetitive transcranial magnetic stimulation for smoking cessation in lung cancer: A preliminary report
X Li*, B. Toll, M. Carpenter, M. George, D. Wilson, Medical University of South Carolina, USA

**P3.090** Optimizing the effects of rTMS on heat pain thresholds with classical conditioning: A preliminary study
L Proulx Bénin1,2, A. Herrero Balbiloni1,2, S. Bouferguene3,2, G. Lavigne3,2, L. De Beaumont3,2, C. Arbour3,2
1Université de Montréal, Canada, 2Hôpital du Sacré-Coeur de Montréal, Canada, 3Université de Montréal, Canada

**P3.091** A microTMS system for peripheral nerve stimulation
M Colella*1,2, R. Laher1, D. Press2, C. McIlduff2, S. Rutkove2, M. Liberti3, A. Pascual-Leone4, G. Bonmassar5
1University of Rome “Sapienza”, Italy, 2Harvard Medical School, USA, 3University of Rome “Sapienza”, Italy, 4Berenson-Allen Center for Noninvasive Brain Stimulation, Division of Cognitive Neurology, Department of Neurology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, 02215, USA, 5Athinoula A. Martinos Center for Biomedical Imaging, Harvard Medical School, Massachusetts General Hospital, USA

**P3.092** Improvement in borderline personality disorder symptoms with dorsomedial prefrontal cortex rTMS: Two cases
A Calderón Moctezuma1,2, J. Reyes-López2,1, L. García-Noguez1,2, R. Rodríguez-Valdes3,2, N. Hernández-Chan3, M. Barbosa-Luna4, G. Roque-Roque1,2, S. Cañizares-Gómez2,3, A. Brunner-Mendoza4
1University of Queretaro, Mexico, 2Nervous System Clinic, Mexico, 3Autonomous University of Queretaro, Mexico, 4National Autonomous University of Mexico, Mexico

**P3.093** The effect of transcranial magnetic stimulation on living human neurons
A Thomson1,2, S. Tielens1, T. Schuhmann1, T. De Graaf1, G. Kenis2, B. Rutten1, A. Sack1
1Maastricht University, Netherlands, 2Maastricht University, Faculty of Health, Medicine and Life Sciences, Department of Psychiatry and Neuropsychology, School for Mental Health and Neuroscience & Center for Integrative Neuroscience, Maastricht University, Netherlands

**P3.094** Influence of the effect of race on cortical current flow due to ECT
C. Thomas1, Z. Deng2, Y. Huang1,3, G. Venkatasubramanian4, A Datta*1,5
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**P3.095** Moved to poster session 2

**P3.096** Effects of repetitive TMS on cognitive function in Alzheimer’s disease and mild cognitive impairment: A systematic review and meta-analysis
Y Chou*
University of Arizona, USA
[P3.097] Structural correlates of accelerated intermittent theta-burst stimulation for treatment-refractory depression
D De Souza*, M. Gulser, E. Cole, K. Stimpson, X. Xiao, C. Tischler, J. Bishop, W. Tate, K. Sudheimer, N. Williams, Stanford University, USA

[P3.098] Preliminary analysis of accelerated intermittent theta burst stimulation for treatment-resistant depression in an inpatient setting
W Tate*, E. Cole, C. Tischler, K. Stimpson, B. Bentzley, A. Schatzberg, K. Sanborn, N. Williams, Stanford University School of Medicine, USA

[P3.099] Attenuating pain with theta burst stimulation (TBS): A sham-controlled neuroimaging study evaluating the relative efficacy of medial versus dorsolateral stimulation
L Dowdle*, J. Imperatore, S. Hamilton, M. George, J. Borckardt, C. Hanlon, Medical University of South Carolina, USA

[P3.100] Clinical and neuroplastic effect of inhibitory rTMS on the sensory-motor cortical areas in RLS: A proof of concept study
G Lanza*1, D. Aricò2, B. Lanuza1, F. Cosentino1, M. Cantone3, M. Papotto1, D. Paci4, M. Pennisi4, R. Bella5, G. Pennisi5, W. Paulus6, R. Ferri5, 1Oasi Research Institute - IRCCS, Italy, 2Oasi Research Institute - IRCCS, Troina, Italy, 3IRCCS Centro Neurolesi Bonino Pulejo, Italy, 4Emergency Hospital Cannizzaro, Italy, 5University of Catania, Italy, 6Georg August University, Germany

[P3.101] Open Trial of Repetitive Transcranial Magnetic Stimulation in Youth with Treatment-Resistant Major Depression
P Mac Master*, P. Croarkin?, T. Wilkes1, Q. McLellan1, L. Langevin1, N. Jaworska2, Y. Jasau1, E. Zewdie1, P. Ciechanski1, A. Kirton1, 1University of Calgary, Canada, 2Mayo Clinic, USA, 3University of Ottawa, Canada

[P3.102] The acute effects of a combined yoga and transcranial direct current stimulation on working memory and mindfulness
M Danilewitz*, S. Gao, J. Brown, F. Vila-Rodriguez, University of British Columbia, Canada

[P3.103] Model-driven transcranial electric stimulation in memory research
I Alekseichuk*1,2, Z. Turi1, S. Veit1, W. Paulus1, 1Georg-August University of Goettingen, Germany, 2University of Minnesota, USA

[P3.104] Robotic TMS motor map changes after rTMS intervention in children with Tourette’s syndrome
C Kahl*, A. Kirton1, T. Pringsheim1, P. Croarkin2, E. Zewdie1, R. Swansburg1, F. MacMaster1, 1University of Calgary, Canada, 2Mayo Clinic, USA

[P3.105] Stability of hierarchical clustering for targeted transcranial magnetic stimulation
J Bishop*, Z. Davis1, X. Xiao2, K. Sudheimer1, N. Williams1, 1Stanford University, USA, 2Stanford University, USA

[P3.106] Rapid-paired associative stimulation induces changes in the excitability profile of unaffected hand muscles in patients with idiopathic dystonia
R Sondergaard*, L. Gan, Y. Jasau1, Z. Kiss, D. Martino, University of Calgary, Canada

[P3.107] High temporal resolution dynamic network studies of schizophrenia brains by 3-D TMS-EEG techniques
D Gupta*, X. Du2, E. Hong2, F. Choa1, 1University of Maryland Baltimore County, USA, 2University of Maryland School of Medicine, USA

[P3.108] The correlation between baseline prestimulus brain activity and anxiety change in single-session transcranial direct current stimulation
K Nishida*, R. Pascual-Marqui1,2, K. Kouji1, M. Yoshimura1, S. Ueda1, S. Ikeda1, Y. Kosikawa1, R. Ishi1, T. Kinoshita1, 1Kansai Medical University, Japan, 2University of Zurich, Switzerland, 3Osaka University Graduate School of Medicine, Japan

[P3.109] Precision stimulation of parietal lobe targets in neurodegenerative and neuropsychiatric disorders
J Taylor*1,2, W. McNemer1,2, P. Bhatt1, B. Hambro1, N. Strossman1, M. Gilmore3, 1VA Palo Alto Health Care System, USA, 2Stanford University School of Medicine, USA, 3industry - retired, USA

[P3.110] Moved to poster session 2

[P3.111] Robotic Transcranial Magnetic Stimulation (TMS) motor mapping in children
A Giuffre*1,2, E. Zewdie1,3,4, C. Kahl1, A. Kirton1,3,4,
A competence by design model for integrating neurostimulation modalities into psychiatry residency training

N Ainsworth*, M. Danilewitz, C. Liu, F. Villa-Rodriguez, University of British Columbia, Canada

Repetitive transcranial magnetic stimulation for improving cognition in veterans with TBI: Results from pilot clinical trial

M. Adamson1,2, S. Siddiqi3, G. Swaminath1, L. Wu4, W. McNerney4, K. Wortman4,2, V. Darcy4, A. Noda2, B. Hernandez2, R. Toli2, J. Cheng4, S. Chao4, M. Yutsis2, B. Yochim4, D. Clark4,2, A. Etkin2,4, W. Ashford4,2, O. Harris4,2, J. Yesavage4,2, J Coetzee2,*

Defense and Veterans Brain Injury Center, USA, Stanford School of Medicine, USA,4 Harvard Medical School, USA,4 VA Palo Alto Health Care System, USA,4 Defense and Veterans Brain Injury Center, VA Palo Alto, USA

A transcranial direct current stimulation system for simultaneous EEG measurement

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Graduate School & CREH center, Dongseo School, Republic of Korea,4 Kumoh National Institute of Technology, Republic of Korea.

Physical therapy using by cranio cervical oscillating mechanical stimulation for chronic migraine

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Lepidium meyenii (maca) and the cerebral stimulation for mobile phones: Some answers in an animal model

C Marín Tello1,* L. Matos-Deza1, J. Aliaga-Arauco2, C. Lombardi-Pérez3, E. Castañeda-Marín1, R. Rengifo-Pena dillos1, S. Chaflaque-Viteri3, C. Sánchez-Marín3, E. Ponce-López4

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Deep brain stimulation for Parkinson disease with severe axial disability. A case report

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Effects of transcranial direct current stimulation on parietal and primary motor cortex on modulates cortex excitability in humans

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King Fahad Specialist Hospital Dammam, Saudi Arabia,4 National University of Computer and Emerging Sciences, Pakistan,4 King Saud University, Saudi Arabia,4 Hallym University College of Medicine, Korea, Democratic People’s Republic of

ReEnabling ConsciOus behaViors by Engaging dopamineRgic pathwaYs (RECOVERY)

T Bender Pape1,2,* J. Rosenow3, A. Herrold1,3, S. Livengood1, S. Kletzel1, A. Guernon3, T. Mallinson4, D. Bhu mam5, M. Pacheco1, V. Patil1, T. Parrish2, M. Connelly4

US Dept of Veterans Affairs, USA,4 Northwestern University Feinberg School of Medicine, USA,4 Northwestern University, USA, The George Washington University, USA,4 University of Illinois at Chicago, USA,4 Captain James A Lovell Federal Health Care Center, USA

Magnetic seizure therapy produces neuroplasticity in treatment-resistant depression

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Transcranial direct current stimulation (tDCS) for postoperative pain relief in arthroscopic rotator cuff repair

H Shitara2, T. Ichinose, N. Hamano, T. Sasaki, D. Shimoyama, M. Kamiyama, R. Miyamoto, H. Chikuda, Gunma University Graduate School of Medicine, Japan

Interaction of electrical and ultrasonic neuromodulation: A computational study

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Site-specifies effects of online repetitive transcranial magnetic stimulation (rTMS) on working memory (WM)

L Beynel1,* S. Davis1, C. Crowell1, S. Hilbig1, H. Palmer1, A. Brito1, C. Hile1, W. Lim1, D. Nguyen1, M. Dannhauer1, A. Peterchev1, R. Cabeza1, H. Lisanby2,3, B. Luber2, L. Appelbaum1
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Effects of online repetitive transcranial magnetic stimulation (rTMS) on cognition: A meta-analysis and recommendations for future studies

L Beynel1,* L. Appelbaum1, B. Luber2, C. Crowell1, S. Hilbig1, W. Lim1, D. Nguyen1, N. Chrapliwy1, S.
A setup for studying very early TMS-evoked EEG potentials: Prospects and pitfalls
S Pillen*1, N. Knodell2, C. Zrenner2, U. Ziemann2, T. Bergmann2,3,4
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Modulating brain functional connectivity using transcranial ultrasound stimulation
E. Anguluan, E. Kim, J. Kim*
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Resting-state functional connectivity as a predictor of response to electroconvulsive therapy in schizophrenia
X Yang*, Z. Xu, J. Sun, P. Liu, X. Zeng, W. Qin, Xidian University, China

Abnormal brain functional connectivity after subcortical stroke: A TMS-EEG study
G. Dang1,2, X. Su1,2, M. Yang1,2, S. Che1,2, H. Ren1,2, Z. Li1, Y Guo*1,2
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Repetitive TMS over the dorsal premotor cortex impairs the prediction of observed action
W Stadler*, L. Brich, C. Bäuche, J. Hermdsdörfer, Technical University of Munich, Germany

Focal TACS of the primary motor hand area at individual mu and beta rhythm – effects on corticospinal excitability
M Madsen1, M. Takemi2, J. Kesselheim1, S. Tashiro1,4, H. Siebner2,5
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Significant changes in psychological profile in OCD-patients after deep brain stimulation
L. Hiekkala-Tiusanen1, M. Nyrhinen1, E. Leinonen1,2, K. Lehtimäki1, K. Järventausta*1,2
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Real-time neuronavigation feedback in concurrent TMS-fMRI
M Wolecz*, M. Tik, N. Pratapa, M. Prinčič, A. Schuler, C. Windischberger, Medical University of Vienna, Austria

Human vs Non human primates: practical tips
L Aceves*, D. Doude1
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Fatigue in hemiparetic children with perinatal stroke is associated with altered cortical excitability
J Wrightson*1, E. Zewdie2,1, H. Kuo2,1, G. Millet1,3, A. Kirton2,4,1
1University of Calgary, Canada, 2Alberta Children’s Hospital, Canada, 3Jean Monnet University, France, 4Jean Monnet University Saint-Etienne, Canada

Identifying brain stimulation targets for migraine using coordinate-based network mapping
M Burke*, J. Joutsa2, A. Cohen1,1, L. Soussand1, R. Burstein2, M. Fox1,1
1Harvard Medical School, USA, 2University of Turku, Finland, 3Beth Israel Deaconess Medical Center, USA

Deep brain stimulation of the nucleus basalis of Meynert in an experimental model of dementia
S Hescham*, H. Liu, M. Aldehri, A. Jahanshahi, Y. Temel, Maastricht University, Netherlands

Unimanual, low-force instability control facilitates the corticospinal excitability in the ipsilateral M1 with no evidence of ipsilateral silent periods
N Ko1,2, C. Laine2, F. Valero-Cuevas, B. Fisher2
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Repetitive transcranial magnetic stimulation (rTMS) as an effective intervention for chronic dizziness following mild traumatic brain injury: A case study
E Paxman*, J. Stilling, L. Mercier, C. Debert, University of Calgary, Canada

Dry electrode impedance conditioning for improved electrophysiological recording and electrical stimulation
S Turovets*, E. Essaki Arumugam1, A. McCutcheon1, Y. Tanaka2, B. McSwain1
1Philips Neuro, USA, 2OHSU, USA

Transcranial magnetic stimulation and electroencephalography in advancing the diagnosis and treatment of depression
[P3.141] fMRI correlates of neuromodulation of the dorsolateral prefrontal cortex using transcranial magnetic stimulation in patients with resistant obsessive compulsive disorder
N Goyal*, C. Roy, D. Ram,
Central Institute of Psychiatry, India

[P3.142] Development of a clinical transcranial magnetic stimulation course for improving TMS aptitude and attitude in psychiatric residents
K Raj*, N. Williams, M. Bhati, H. Solvason, C. Debattista,
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[P3.143] Withdrawn

G Blivet*1, L. Auboyer1, J. Meunier2, L. Ceolin2, F. Roman2, R. Burcelin3, J. Touchon4,5,
1Regenlife, France, 2Amylgen, France, 3Vaiomer, France, 4Inserm U1061, France, 5Neurology Department, University of Montpellier, France

[P3.145] Characterizing age-related changes in supplementary motor area—primary motor cortex connectivity
A Vallence*, B. Rurak, P. Drummond,
Murdoch University, Australia

[P3.146] Changes in neuronal oscillations account for modulations in working memory dynamics: EEG-tACS study
M Ermolova*, V. Belyaeva1, N. Novikov1, B. Gutkin1,2, M. Feura1, T. Fedele1,
1Higher School of Economics, Russian Federation, 2Ecole Normale Supérieure PSL University, France

[P3.147] Modulation of neural oscillation power spectral density with transcranial photobiomodulation
R Zomorodi*1, G. Loheswaran2, A. Pushparaj2, L. Lim2,
1Centre for Addiction and Mental Health, Temerty Centre for Therapeutic Brain Intervention, Canada, 2Vialight Inc., Canada, 3Ironstone Product Development Inc, Canada

[P3.148] The pharmacology of interhemispheric signal propagation in the motor cortex
J. Hui1,2, R Zomorodi*1, B. Salavati1, P. Lioumis2, T. Rajji1,2, D. Blumberger1,2, Z. Daskalakis1,2,
1University of Toronto, Canada, 2Temerty Centre for Therapeutic Brain Intervention at the Centre for Addiction and Mental Health, Canada

[P3.149] Intermittent theta burst stimulation plus external counterpulsation for upper limb motor recovery after ischemic stroke
W He*, T. Leung1,2, H. Leung3, L. Wong1,
1The Chinese University of Hong Kong, Hong Kong, 2Prince of Wales Hospital, Hong Kong

[P3.150] Withdrawn

[P3.151] tACS in patients with resistant negative symptoms of schizophrenia: A case series.
L Kallel*, M. Mondino2, J. Brunelin2,
1Résidence ENNESRINE, Tunisia, 2Lyon University, France

[P3.152] Comparing rotational-field-dTMS to unidirectional-dTMS in healthy volunteers
Y. Roth1, G. Pell2, M. Ankry3, Y. Hadad3, A. Eisen4, Y. Burnishev4, A Tendler*1,2, E. Moses4, A. Zangen1,
1Ben Gurion University, USA, 2Ben Gurion University, Israel, 3Brainsway, Israel, 4Weizmann, Israel, 5Advanced Mental Health Care Inc., USA

[P3.153] How much can patients expect to improve with six weeks of deep TMS for OCD?
R. Gersner1, E. Sisko2, A Tendler*1,2, 
1Brainsway, USA, 2Advanced Mental Health Care Inc., USA

[P3.154] Antiepileptogenic effects of low frequency stimulation immediately before kindling are associated with reduced beta and gamma sub band powers
A. Yadollahpour1, M. Jalilifar1, R Rostami2,
1Ahvaz Jundishapur University of Medical Sciences, Iran, Islamic Republic of, 2Tehran University, Iran, Islamic Republic of

[P3.155] Quantitative assessments of epileptogenesis using spectral power analysis of extracellular EEG: A kindling model in Rat
A. Yadollahpour1, M. Jalilifar1, R Rostami2, 
1Ahvaz Jundishapur University of Medical Sciences, Iran, Islamic Republic of, 2Tehran University, Iran, Islamic Republic of
**[P3.151]** Effectiveness of twice-daily theta burst stimulation at prefrontal cortex on methamphetamine dependents
D Zhao, T Yuan

**[P3.152]** Low-frequency repetitive transcranial cerebellar magnetic stimulation as an 'add-on' therapy in patients with Essential Tremor
H-W Shin, M. Hallett, Chung-Ang University College of Medicine, Korea, Republic of.

**[P3.153]** Oxidized phosphatidylcholines as a predictive factor of treatment response to repetitive transcranial magnetic stimulation in major depressive disorder
Edel€È, M. Modirrousta, A. Ravandi, University of Manitoba, Max Rady College of Medicine, Canada, St. Boniface Hospital Albrechtsen Research Centre, Canada

**[P3.154]** Transcranial Alternating Current Stimulation Aimed at the IFG Influences Motor Skills and Facial Perception
T Bless, P. Mulvany, J. Cramer, J. Pineda, University of California, San Diego, USA

**[P3.155]** Directional or omnidirectional Deep Brain Stimulation for Parkinson’s Disease: Results of a prospective blinded-comparison multi-centre study
A. Schnitzler, P. Mir, M. Brodsky, L. Verhagen, B. Cheeran, E. Karst, F. Defresne, J. Vesper, Heinrich Heine University of Düsseldorf, Germany, Virgen del Roció University Hospital, Seville, Spain, Oregon Health & Science University, USA, Rush Medical College, USA, Abbott, Belgium

**[P3.156]** All you need to know about pediatric tms the pathway from the past to the future in treatment of adolescent mental illness
A. Elmaadawi, A. Marei, Indiana University School of Medicine-South Bend Campus, USA, Brains’ Clinic, Egypt

**[P3.157]** Long-term follow-up of cocaine-use patterns in CUD patients undergoing repetitive Transcranial Magnetic Stimulation treatment
L. Gomez Perez, D. Epstein, S. Cardullo, M. Sarlo, A. Terraneo, L. Gallimberti, G Madeo, Novella Fronda Foundation, Italy, Intramural Research Program, National Institute on Drug Abuse, National Institutes of Health, USA, University of Padova, Italy, Johns Hopkins University School of Medicine, USA

**[P3.158]** Repetitive transcranial magnetic stimulation (rTMS) in patients with tinnitus: a case series
S Singh, J. Bakshi, D. Vir, D. Dua, Postgraduate Institute of Medical Education and Research Chandigarh, India

**[P3.159]** Clinical factors contributing to morbidity, mortality, and cost in patients requiring ECT for the management of catatonia
B Kitay, R. Ostroff, Yale University School of Medicine, USA

**[P3.160]** Deep brain stimulation in treatment resistant schizophrenia: post-stimulation PET changes
A Roldan, S. Sarró, M. Rabello, F. Sampedro, A. Alonso-Solís, E. Grasa, M. Portella, V. Pérez, E. Álvarez, J. Moleí, R. Rodríguez, P. McKenna, E. Karst, L. Verhagen, E. Portella, F. Defresne, E. Pomarol-Clotet, I. Corripio, Universitat Autònoma de Barcelona (UAB), Spain, FIDMAG Germanes Hospitalàries Research Foundation, Spain, Hospital de la Santa Creu i Sant Pau, Spain, Institut de Neuropsiquiatria i Addicions, Hospital del Mar; UAB, Spain, Hospital de la Santa Creu i Sant Pau; UAB, Spain

**[P3.161]** Sleep quality in patients with cocaine use disorder undergoing repetitive Transcranial Magnetic Stimulation (rTMS)
S. Cardullo, L. Gomez Perez, D. Epstein, N. Cellini, T. Monteani, A. Terraneo, A. Bonci, L. Gallimberti, G Madeo, Novella Fronda Foundation, Padua, Italy, Intramural Research Program, National Institute on Drug Abuse, National Institutes of Health, USA, University of Padova, Padua, Italy, Johns Hopkins University School of Medicine, USA

**[P3.162]** Clinical factors contributing to morbidity, mortality, and cost in patients requiring ECT for the management of catatonia
B Kitay, R. Ostroff, Yale University School of Medicine, USA

**[P3.163]** Sleep quality in patients with cocaine use disorder undergoing repetitive Transcranial Magnetic Stimulation (rTMS)
S. Cardullo, L. Gomez Perez, D. Epstein, N. Cellini, T. Monteani, A. Terraneo, A. Bonci, L. Gallimberti, G Madeo, Novella Fronda Foundation, Padua, Italy, Intramural Research Program, National Institute on Drug Abuse, National Institutes of Health, USA, University of Padova, Padua, Italy, Johns Hopkins University School of Medicine, USA