

## TES Literature Citations

Ahn, S., Prim, J. H., Alexander, M. L., Mcculloch, K. L., & Fröhlich, F. (2018). Identifying and Engaging Neuronal Oscillations by Transcranial Alternating Current Stimulation in Patients With Chronic Low Back Pain: A Randomized, Crossover, Double-Blind, Sham-Controlled Pilot Study. *The Journal of Pain*. doi:10.1016/j.jpain.2018.09.004

Alm, P., & Dreimanis, K. (2013). Neuropathic pain: Transcranial electric motor cortex stimulation using high frequency random noise. Case report of a novel treatment. *Journal of Pain Research*, 479. doi:10.2147/jpr.s44648

Alon, G., Syron, S. C., & Smith, G. V. (1998). Is Transcranial Electrical Stimulation (TCES) a Safe Intervention for Children with Cerebral Palsy? *Neurorehabilitation and Neural Repair*, 12(2), 65-71. doi:10.1177/154596839801200204

Ambrus, G. G., Pisoni, A., Primaštin, A., Turi, Z., Paulus, W., & Antal, A. (2015). Bi-frontal transcranial alternating current stimulation in the ripple range reduced overnight forgetting. *Frontiers in Cellular Neuroscience*, 9. doi:10.3389/fncel.2015.00374

Antal, A., & Herrmann, C. S. (2016). Transcranial Alternating Current and Random Noise Stimulation: Possible Mechanisms. *Neural Plasticity*, 2016, 1-12. doi:10.1155/2016/3616807

Antonenko, D., Fixel, M., Grittner, U., Lavidor, M., & Flöel, A. (2016). Effects of Transcranial Alternating Current Stimulation on Cognitive Functions in Healthy Young and Older Adults. *Neural Plasticity*, 2016, 1-13. doi:10.1155/2016/4274127.

Aparicio-Juárez, A., Duhne, M., Lara-González, E., Ávila-Cascajares, F., Calderón, V., Galarraga, E., & Bargas, J. (2018). Cortical stimulation relieves parkinsonian pathological activity in vitro. *European Journal of Neuroscience*. doi:10.1111/ejn.13806

Arendash, G. W. (2012). Transcranial Electromagnetic Treatment Against Alzheimers Disease: Why it has the Potential to Trump Alzheimers Disease Drug Development. *Journal of Alzheimers Disease*, 32(2), 243-266. doi:10.3233/jad-2012-120943

Bestmann, S., & Ward, N. (2017). Are current flow models for transcranial electrical stimulation fit for purpose? *Brain Stimulation*, 10(4), 865-866. doi:10.1016/j.brs.2017.04.002

Bikson, M., Grossman, P., Thomas, C., Louis Zannou, A., Jiang, J., Adnan, T., Mourdoukoutas, A., Kronberg, G., Truong, D., Boggio, P., Brunoni, A., Charvet, L., Fregni, F., Fritsch, B., Gillick, B., Hamilton, R., Hampstead, B., Jankord, R., Kirton, A., Woods, A. (2016). Safety of Transcranial Direct Current Stimulation: Evidence Based Update 2016. *Brain Stimulation*. 9. . 10.1016/j.brs.2016.06.004.

Brighina, F., & Curatolo, M. (2017). P306 Motor cortex tRNS reduce pain and improve affective and cognitive impairment in patients with fibromyalgia: Preliminary results of a randomized sham-controlled trial. *Clinical Neurophysiology*, 128(9). doi:10.1016/j.clinph.2017.07.314

Brunoni, A. R., Amadera, J., Berbel, B., Volz, M. S., Rizzerio, B. G., & Fregni, F. (2011). A systematic review on reporting and assessment of adverse effects associated with transcranial direct current stimulation. *International Journal of Neuropsychopharmacology*, 14(8), 1133-1145. doi:10.1017/s1461145710001690

- Brunoni, A. R., Moffa, A. H., Fregni, F., Palm, U., Padberg, F., Blumberger, D. M., . . . Loo, C. K. (2016). Transcranial direct current stimulation for acute major depressive episodes: Meta-analysis of individual patient data. *British Journal of Psychiatry*,*208*(06), 522-531. doi:10.1192/bjp.bp.115.164715
- Cabral-Calderin, Y., Williams, K. A., Opitz, A., Dechent, P., & Wilke, M. (2016). Transcranial alternating current stimulation modulates spontaneous low frequency fluctuations as measured with fMRI. *NeuroImage*,*141*, 88-107. doi:10.1016/j.neuroimage.2016.07.005
- Camilleri, R., Pavan, A., Ghin, F., Battaglini, L., & Campana, G. (2014). Improvement of uncorrected visual acuity and contrast sensitivity with perceptual learning and transcranial random noise stimulation in individuals with mild myopia. *Frontiers in Psychology*,*5*. doi:10.3389/fpsyg.2014.01234
- Campana, G., Camilleri, R., Moret, B., Ghin, F., & Pavan, A. (2016). Opposite effects of high- and low-frequency transcranial random noise stimulation probed with visual motion adaptation. *Scientific Reports*,*6*(1). doi:10.1038/srep38919
- Chaieb, L., Antal, A., Moser, T., & Wörgötter, F. (2011). Inducing Neuroplastic Changes in the Human Cortex using External Transcranial Electrical Stimulation Techniques (Doctoral dissertation, Göttingen, Georg-August Universität, Diss) [Abstract].
- Chaieb, L., Antal, A., & Paulus, W. (2015). Transcranial random noise stimulation-induced plasticity is NMDA-receptor independent but sodium-channel blocker and benzodiazepines sensitive. *Frontiers in Neuroscience*,*9*. doi:10.3389/fnins.2015.00125
- Chaieb, L., Antal, A., Moser, T., & Wörgötter, F. (2011). Inducing Neuroplastic Changes in the Human Cortex using External Transcranial Electrical Stimulation Techniques (Doctoral dissertation, Göttingen, Georg-August Universität, Diss) [Abstract].
- Doren, J. V., Langguth, B., & Schecklmann, M. (2014). Electroencephalographic Effects of Transcranial Random Noise Stimulation in the Auditory Cortex. *Brain Stimulation*,*7*(6), 807-812. doi:10.1016/j.brs.2014.08.007
- Dowsett, J., & Herrmann, C. S. (2016). Transcranial Alternating Current Stimulation with Sawtooth Waves: Simultaneous Stimulation and EEG Recording. *Frontiers in Human Neuroscience*,*10*. doi:10.3389/fnhum.2016.00135
- Fehér, K. D., & Morishima, Y. (2016). Concurrent Electroencephalography Recording During Transcranial Alternating Current Stimulation (tACS). *Journal of Visualized Experiments*,*(107)*. doi:10.3791/53527
- Fertonani, A., Pirulli, C., & Miniussi, C. (2011). Random Noise Stimulation Improves Neuroplasticity in Perceptual Learning. *Journal of Neuroscience*,*31*(43), 15416-15423. doi:10.1523/jneurosci.2002-11.2011
- Gilula, M. F., & Barach, P. R. (2004). Cranial Electrotherapy Stimulation: A Safe Neuromedical Treatment for Anxiety, Depression, or Insomnia. *Southern Medical Journal*,*97*(12), 1269-1270. doi:10.1097/01.smj.0000136304.33212.06

- Guerra, A., Suppa, A., Bologna, M., Donofrio, V., Bianchini, E., Brown, P., . . . Berardelli, A. (2018). Boosting the LTP-like plasticity effect of intermittent theta-burst stimulation using gamma transcranial alternating current stimulation. *Brain Stimulation*,*11*(4), 734-742. doi:10.1016/j.brs.2018.03.015
- Groen, O. V., & Wenderoth, N. (2017). Random Noise Stimulation of the Cortex: Stochastic Resonance Enhances Central Mechanisms of Perception. *Brain Stimulation*,*10*(1). doi:10.1016/j.brs.2016.11.030
- Haesebaert, F., Mondino, M., Saoud, M., Poulet, E., & Brunelin, J. (2014). Efficacy and safety of fronto-temporal transcranial random noise stimulation (tRNS) in drug-free patients with schizophrenia: A case study. *Schizophrenia Research*,*159*(1), 251-252. doi:10.1016/j.schres.2014.07.043
- Heimrath, K., Fiene, M., Rufener, K. S., & Zaehle, T. (2016). Modulating Human Auditory Processing by Transcranial Electrical Stimulation. *Frontiers in Cellular Neuroscience*,*10*. doi:10.3389/fncel.2016.00053
- Heise, K., Kortzorg, N., Saturnino, G. B., Fujiyama, H., Cuyppers, K., Thielscher, A., & Swinnen, S. P. (2016). Evaluation of a Modified High-Definition Electrode Montage for Transcranial Alternating Current Stimulation (tACS) of Pre-Central Areas. *Brain Stimulation*,*9*(5), 700-704. doi:10.1016/j.brs.2016.04.009
- Helfrich, R., Schneider, T., Rach, S., Trautmann-Lengsfeld, S., Engel, A., & Herrmann, C. (2014). Entrainment of Brain Oscillations by Transcranial Alternating Current Stimulation. *Current Biology*,*24*(3), 333-339. doi:10.1016/j.cub.2013.12.041
- Herrmann, C. S., Rach, S., Neuling, T., & Strüber, D. (2013). Transcranial alternating current stimulation: A review of the underlying mechanisms and modulation of cognitive processes. *Frontiers in Human Neuroscience*,*7*. doi:10.3389/fnhum.2013.00279
- Hoy, K. E., Bailey, N., Arnold, S., Windsor, K., John, J., Daskalakis, Z. J., & Fitzgerald, P. B. (2015). The effect of  $\gamma$ -tACS on working memory performance in healthy controls. *Brain and Cognition*,*101*, 51-56. doi:10.1016/j.bandc.2015.11.002
- Hussain, S. J., & Thirugnanasambandam, N. (2017). Probing phase- and frequency-dependent characteristics of cortical interneurons using combined transcranial alternating current stimulation and transcranial magnetic stimulation. *Journal of Neurophysiology*,*117*(6), 2085-2087. doi:10.1152/jn.00060.2017
- Iaccarino, H., Singer, A., Martorell, A., & A. (2016). Gamma frequency entrainment attenuates amyloid load and modifies microglia. *Nature*,*540*, 230-235. doi:10.1038/nature20587
- Inukai, Y., Saito, K., Sasaki, R., Tsuiki, S., Miyaguchi, S., Kojima, S., . . . Onishi, H. (2016). Comparison of Three Non-Invasive Transcranial Electrical Stimulation Methods for Increasing Cortical Excitability. *Frontiers in Human Neuroscience*,*10*. doi:10.3389/fnhum.2016.00668

Janik, A. B., Rezlescu, C., & Banissy, M. J. (2015). Enhancing Anger Perception With Transcranial Alternating Current Stimulation Induced Gamma Oscillations. *Brain Stimulation*,*8*(6), 1138-1143. doi:10.1016/j.brs.2015.07.032

Kadosh, R. C. (2017). T007 Neural predictors of the effect of transcranial electrical stimulation on learning. *Clinical Neurophysiology*,*128*(3). doi:10.1016/j.clinph.2016.10.

Kar, K., & Krekelberg, B. (2014). Transcranial Alternating Current Stimulation Attenuates Visual Motion Adaptation. *Journal of Neuroscience*,*34*(21), 7334-7340. doi:10.1523/jneurosci.5248-13.2014

Klimke, A., Nitsche, M. A., Maurer, K., & Voss, U. (2016). Case Report: Successful Treatment of Therapy-Resistant OCD With Application of Transcranial Alternating Current Stimulation (tACS). *Brain Stimulation*,*9*(3), 463-465. doi:10.1016/j.brs.2016.03.005

Krause, V., Meier, A., Dinkelbach, L., & Pollok, B. (2016). Beta Band Transcranial Alternating (tACS) and Direct Current Stimulation (tDCS) Applied After Initial Learning Facilitate Retrieval of a Motor Sequence. *Frontiers in Behavioral Neuroscience*,*10*. doi:10.3389/fnbeh.2016.00004

Kreuzer, P., Vielsmeier, V., Peopple, T., & Langguth, B. (2017). A Case Report on Red Ear Syndrome with Tinnitus Successfully Treated with Transcranial Random Noise Stimulation. *Pain Physician*,*20*(199).

Kunze, T., Hunold, A., Haueisen, J., Jirsa, V., & Spiegler, A. (2016). Transcranial direct current stimulation changes resting state functional connectivity: A large-scale brain network modeling study. *NeuroImage*,*140*, 174-187. doi:10.1016/j.neuroimage.2016.02.015

Kvasnak, E., & Andersen, M. (2017). Effect of hf-tRNS on attention and neural coherence. *Brain Stimulation*,*10*(2), 456. doi:10.1016/j.brs.2017.01.339

Lafon, B., Henin, S., Huang, Y., Friedman, D., Melloni, L., Thesen, T., . . . Liu, A. (2018). Low frequency transcranial electrical stimulation does not entrain sleep rhythms measured by human intracranial recordings. *Nature Communications*,*9*(1). doi:10.1038/s41467-018-03392-9

Lee, H. Y., Choi, M. S., Chang, D. S., & Cho, C. (2017). Combined Bifrontal Transcranial Direct Current Stimulation and Tailor-Made Notched Music Training in Chronic Tinnitus. *Journal of Audiology and Otology*,*21*(1), 22-27. doi:10.7874/jao.2017.21.1.22

Leffa, D. T., Bellaver, B., Salvi, A. A., Oliveira, C. D., Caumo, W., Grevet, E. H., . . . Torres, I. L. (2018). Transcranial direct current stimulation improves long-term memory deficits in an animal model of attention-deficit/hyperactivity disorder and modulates oxidative and inflammatory parameters. *Brain Stimulation*,*11*(4), 743-751. doi:10.1016/j.brs.2018.04.001

Leong, S., Ridder, D. D., Vanneste, S., Ross, S., Sutherland, W., & Manning, P. (2017). Effect of transcranial pink noise stimulation of anterior cingulate cortex on food craving. *Brain Stimulation*,*10*(2), 351. doi:10.1016/j.brs.2017.01.028

Looi, C. Y., Lim, J., Sella, F., Lollot, S., Duta, M., Avramenko, A. A., & Kadosh, R. C. (2017). Transcranial random noise stimulation and cognitive training to improve learning and cognition of the atypically developing brain: A pilot study. *Scientific Reports*,*7*(1). doi:10.1038/s41598-017-04649-x

Mammarella, N., Domenico, A. D., Palumbo, R., & Fairfield, B. (2017). Self-generation and positivity effects following transcranial random noise stimulation in medial prefrontal cortex: A reality monitoring task in older adults. *Cortex*,*91*, 186-196. doi:10.1016/j.cortex.2016.11.005

Meinzer, M., Darkow, R., Lindenberg, R., & Flöel, A. (2016). Electrical stimulation of the motor cortex enhances treatment outcome in post-stroke aphasia. *Brain*,*139*(4), 1152-1163. doi:10.1093/brain/aww002

Milani, P., Piu, P., Popa, T., Volpe, R. D., Bonifazi, M., Rossi, A., & Mazzocchio, R. (2010). Cortisol-induced effects on human cortical excitability. *Brain Stimulation*,*3*(3), 131-139. doi:10.1016/j.brs.2009.07.004

Moisa, M., Polania, R., Grueschow, M., & Ruff, C. C. (2016). Brain Network Mechanisms Underlying Motor Enhancement by Transcranial Entrainment of Gamma Oscillations. *The Journal of Neuroscience*,*36*(47), 12053-12065. doi:10.1523/jneurosci.2044-16.2016

Murphy, O., Hoy, K., Fitzgerald, P., Wong, D., & Segrave, R. (2017). Behavioural and neurophysiological effects of transcranial electrical stimulation (tES) in healthy and depressed individuals: A TMS-EEG study. *Brain Stimulation*,*10*(2), 393. doi:10.1016/j.brs.2017.01.163

Naro, A., Leo, A., Russo, M., Cannavò, A., Milardi, D., Bramanti, P., & Calabrò, R. S. (2016). Does Transcranial Alternating Current Stimulation Induce Cerebellum Plasticity? Feasibility, Safety and Efficacy of a Novel Electrophysiological Approach. *Brain Stimulation*,*9*(3), 388-395. doi:10.1016/j.brs.2016.02.005

Neuling, T., Rach, S., & Herrmann, C. S. (2013). Orchestrating neuronal networks: Sustained after-effects of transcranial alternating current stimulation depend upon brain states. *Frontiers in Human Neuroscience*,*7*. doi:10.3389/fnhum.2013.00161

Neuling, T., Ruhnau, P., Weisz, N., Herrmann, C. S., & Demarchi, G. (2017). Faith and oscillations recovered: On analyzing EEG/MEG signals during tACS. *NeuroImage*,*147*, 960-963. doi:10.1016/j.neuroimage.2016.11.022

Novembre, G., Knoblich, G., Dunne, L., & Keller, P. E. (2017). Interpersonal synchrony enhanced through 20 Hz phase-coupled dual brain stimulation. *Social Cognitive and Affective Neuroscience*. doi:10.1093/scan/nsw172

Pahor, A., & Jaušovec, N. (2014). The effects of theta transcranial alternating current stimulation (tACS) on fluid intelligence. *International Journal of Psychophysiology*,*93*(3), 322-331. doi:10.1016/j.ijpsycho.2014.06.015

Palm, U., Chalah, M. A., Padberg, F., Al-Ani, T., Abdellaoui, M., Sorel, M., . . . Ayache, S. S. (2016). Effects of transcranial random noise stimulation (tRNS) on affect, pain and attention in multiple sclerosis. *Restorative Neurology and Neuroscience*,*34*(2), 189-199. doi:10.3233/rnn-150557

Palm, U., Hasan, A., Keeser, D., Falkai, P., & Padberg, F. (2013). Transcranial random noise stimulation for the treatment of negative symptoms in schizophrenia. *Schizophrenia Research*,*146*(1-3), 372-373. doi:10.1016/j.schres.2013.03.003

- Pasqualotto, A. (2016). Transcranial random noise stimulation benefits arithmetic skills. *Neurobiology of Learning and Memory*,*133*, 7-12. doi:10.1016/j.nlm.2016.05.004
- Penton, T., Dixon, L., Evans, L., & Banissy, M. J. (2017). Emotion perception improvement following high frequency transcranial random noise of the inferior frontal cortex. *Brain Stimulation*,*10*(4). doi:10.1016/j.brs.2017.04.036
- Prete, G., Malatesta, G., & Tommasi, L. (2017). Facial gender and hemispheric asymmetries: A hf-tRNS study. *Brain Stimulation*,*10*(6), 1145-1147. doi:10.1016/j.brs.2017.08.002
- Prichard, G., Weiller, C., Fritsch, B., & Reis, J. (2014). Effects of Different Electrical Brain Stimulation Protocols on Subcomponents of Motor Skill Learning. *Brain Stimulation*,*7*(4), 532-540. doi:10.1016/j.brs.2014.04.005
- Reato, D., Rahman, A., Bikson, M., & Parra, L. C. (2013). Effects of weak transcranial alternating current stimulation on brain activity—a review of known mechanisms from animal studies. *Frontiers in Human Neuroscience*,*7*. doi:10.3389/fnhum.2013.00687
- Rufener, K. S., Oechslin, M. S., Zaehle, T., & Meyer, M. (2016). Transcranial Alternating Current Stimulation (tACS) differentially modulates speech perception in young and older adults. *Brain Stimulation*,*9*(4), 560-565. doi:10.1016/j.brs.2016.04.002
- Rufener, K. S., Ruhnau, P., Heinze, H., & Zaehle, T. (2017). Transcranial Random Noise Stimulation (tRNS) Shapes the Processing of Rapidly Changing Auditory Information. *Frontiers in Cellular Neuroscience*,*11*. doi:10.3389/fncel.2017.00162
- Santarnecci, E., Biasella, A., Tatti, E., Rossi, A., Prattichizzo, D., & Rossi, S. (2017). High-gamma oscillations in the motor cortex during visuo-motor coordination: A tACS interferential study. *Brain Research Bulletin*,*131*, 47-54. doi:10.1016/j.brainresbull.2017.03.006
- Schmidt, S., Mante, A., Rönnefarth, M., Fleischmann, R., Gall, C., & Brandt, S. A. (2013). Progressive enhancement of alpha activity and visual function in patients with optic neuropathy: A two-week repeated session alternating current stimulation study. *Brain Stimulation*,*6*(1), 87-93. doi:10.1016/j.brs.2012.03.008
- Schutter, D. J., & Wischniewski, M. (2016). A meta-analytic study of exogenous oscillatory electric potentials in neuroenhancement. *Neuropsychologia*,*86*, 110-118. doi:10.1016/j.neuropsychologia.2016.04.011
- Shiozawa, P., Fregni, F., Benseñor, I. M., Lotufo, P. A., Berlim, M. T., Daskalakis, J. Z., . . . Brunoni, A. R. (2014). Transcranial direct current stimulation for major depression: An updated systematic review and meta-analysis – ERRATUM. *The International Journal of Neuropsychopharmacology*,*17*(09), 1539. doi:10.1017/s1461145714000807
- Smith, R. B., PhD. (2006). *Cranial Electrotherapy Stimulation, Its First Fifty Years, Plus Three*.
- Sprugnoli, G., Liew, S., Bricolo, E., Costantini, G., Salvi, C., Musaeus, C., . . . Santarnecci, E. (2017). Going beyond the Eureka moment: Enhancement of insightful solutions by means of tACS and tRNS. *Brain Stimulation*,*10*(2), 402. doi:10.1016/j.brs.2017.01.193

- Summers, J. J., Kang, N., & Cauraugh, J. H. (2016). Does transcranial direct current stimulation enhance cognitive and motor functions in the ageing brain? A systematic review and meta-analysis. *Ageing Research Reviews*,*25*, 42-54. doi:10.1016/j.arr.2015.11.004
- Tadini, L., El-Nazer, R., Brunoni, A. R., Williams, J., Carvas, M., Boggio, P., . . . Fregni, F. (2011). Cognitive, Mood, and Electroencephalographic Effects of Noninvasive Cortical Stimulation With Weak Electrical Currents. *The Journal of ECT*,*27*(2), 134-140. doi:10.1097/yct.0b013e3181e631a8
- Thibaut, A., Russo, C., Morales-Quezada, L., Hurtado-Puerto, A., Deitos, A., Freedman, S., . . . Fregni, F. (2017). Neural signature of tDCS, tPCS and their combination. *Brain Stimulation*,*10*(4). doi:10.1016/j.brs.2017.04.075
- To, W. T., Ost, J., Hart, J., Ridder, D. D., & Vanneste, S. (2016). The added value of auditory cortex transcranial random noise stimulation (tRNS) after bifrontal transcranial direct current stimulation (tDCS) for tinnitus. *Journal of Neural Transmission*,*124*(1), 79-88. doi:10.1007/s00702-016-1634-2
- Vöröslakos, M., Takeuchi, Y., Brinyiczki, K., Zombori, T., Oliva, A., Fernández-Ruiz, A., . . . Berényi, A. (2018). Direct effects of transcranial electric stimulation on brain circuits in rats and humans. *Nature Communications*,*9*(1). doi:10.1038/s41467-018-02928-3
- Vossen, A., Gross, J., & Thut, G. (2015). Alpha Power Increase After Transcranial Alternating Current Stimulation at Alpha Frequency ( $\alpha$ -tACS) Reflects Plastic Changes Rather Than Entrainment. *Brain Stimulation*,*8*(3), 499-508. doi:10.1016/j.brs.2014.12.004
- Voskuhl, J., Huster, R. J., & Herrmann, C. S. (2016). BOLD signal effects of transcranial alternating current stimulation (tACS) in the alpha range: A concurrent tACS-fMRI study. *NeuroImage*,*140*, 118-125. doi:10.1016/j.neuroimage.2015.10.003
- Witkowski, M., Garcia-Cossio, E., Chander, B. S., Braun, C., Birbaumer, N., Robinson, S. E., & Soekadar, S. R. (2016). Mapping entrained brain oscillations during transcranial alternating current stimulation (tACS). *NeuroImage*,*140*, 89-98. doi:10.1016/j.neuroimage.2015.10.024
- Wischnewski, M., Zerr, P., & Schutter, D. J. (2016). Effects of Theta Transcranial Alternating Current Stimulation Over the Frontal Cortex on Reversal Learning. *Brain Stimulation*,*9*(5), 705-711. doi:10.1016/j.brs.2016.04.011
- Woods, A., Antal, A., Bikson, M., Boggio, P., Brunoni, A., Celnik, P., . . . Nitsche, M. (2016). A technical guide to tDCS, and related non-invasive brain stimulation tools. *Clinical Neurophysiology*,*127*(2), 1031-1048. doi:10.1016/j.clinph.2015.11.012
- Zaghi, S., Acar, M., Hultgren, B., Boggio, P. S., & Fregni, F. (2009). Noninvasive Brain Stimulation with Low-Intensity Electrical Currents: Putative Mechanisms of Action for Direct and Alternating Current Stimulation. *The Neuroscientist*,*16*(3), 285-307. doi:10.1177/1073858409336227

## Citations for substance abuse

1. Volkow ND, Fowler JS. Addiction, a disease of compulsion and drive: involvement of the orbitofrontal cortex. *Cereb Cortex*. 2000;10:318–25.
2. Volkow ND, Fowler JS, Wang JG, Goldstein ZR. Role of dopamine, the frontal cortex and memory circuits in drug addiction: insight from imaging studies. *Neurobiol Learn Mem*. 2002;78(3):610–24.
3. Di Chiara G. Drug addiction as dopamine-dependent associative learning disorder. *Eur J Pharmacol*. 1999;30(375):13–30.
4. Reuter J, Raedler T, Rose M, Hand I, Glascher J, Buchel C. Pathological gambling is linked to reduced activation of the mesolimbic reward system. *Nat Neurosci*. 2005;8:147–8.
5. Wise RA, Rompre PP. Brain dopamine and reward. *Annu Rev Psychol*. 1989;40:191–225.
6. Hyman SE. Addiction: a disease of learning and memory. *Am J Psychiatry*. 2005;162(8):1414–22.
7. Oslin DW, Cary M, Slaymaker V, Collieran C, Blow FC. Daily ratings measures of alcohol craving during an inpatient stay define subtypes of alcohol addiction that predict subsequent risk for resumption of drinking. *Drug Alcohol Depend*. 2001;03(3):131–6.
8. Sinha R, Garcia M, Paliwal P, Kreek MJ, Rounsaville BJ. Stress-induced cocaine craving and hypothalamic- pituitary- adrenal responses are predicted of cocaine relapse outcomes. *Arch Gen Psychiatry*. 2006;63(3): 324–31.
9. Drummond DC, Tiffany ST, Glautier S, Remington B. Cue exposure in understanding and treating addictive behaviors. *Addictive behavior: cue exposure theory and practice*. New York, NY: John Wiley & Sons; 1995. p. 1–17.
10. Hanlon CA, Hartwell KJ, Canterberry M, Li X, Owens M, Lematty T, et al. Reduction of cue-induced craving through realtime neurofeedback in nicotine users: the role of region of interest selection and multiple visits. *Psychiatry Res*. 2013;213(1):79–81.
11. Brody AL, Mandelkern MA, London ED, Childress AR, Lee GS, Bota RG, et al. Brain metabolic changes during cigarette craving. *Arch Gen Psychiatry*. 2002;59(12):1162–72.
12. Bonson KR, Grant SJ, Contoreggi CS, Links JM, Metcalfe J, Weyl HL, et al. Neural systems and cue-induced cocaine craving. *Neuropsychopharmacology*. 2002;26(3):376–86.
13. Grant S, London ED, Newlin DB, Villemagne VL, Liu X, Contoreggi C, et al. Activation of memory circuits during cue-elicited cocaine craving. *Proc Natl Acad Sci U S A*. 1996;93(21):12040–5.
14. McBride D, Barrett SP, Kelly JT, Aw A, Dagher A. Effects of expentancy and abstinence on the neural response to smoking cues in cigarette smokers: an fMRI study. *Neuropsychopharmacology*. 2006;31(12): 2728–38.
15. Maas LC, Lukas SE, Kaufman MJ, Weiss RD, Daniels SL, Rogers VW, et al. Functional magnetic resonance imaging of human brain activation during cue-induced cocaine craving. *Am J Psychiatry*. 1998;155(1):1789–98.
16. Wilson SJ, Sayette MA, Fiez JA. Prefrontal responses to drug cues: a neurocognitive analysis. *Nat Neurosci*. 2004;7(3):211–4.
17. Kober H, Lacadie CM, Wexler BE, Malison RT, Sinha R, Potenza MN. Brain activity during cocaine craving and gambling urges: an fMRI study. *Neuropsychopharmacology*. 2016;41:628–37.
18. Karreman M, Moghaddam B. The prefrontal cortex regulates the basal release of dopamine in the limbic striatum: an effect mediated by ventral tegmental area. *J Neurochem*. 1996;66(2):589–98.



19. Kober H, Mende-Siedlecki P, Kross EF, Weber J, Mischel W, Hart CL, et al. Prefrontal-striatal pathway underlies cognitive regulation of craving. *Proc Natl Acad Sci U S A*. 2010;107(33):14811–6.
20. Due DL, Huettel SA, Hall WG, Rubin DC. Activation in mesolimbic and visuospatial neural circuits elicited by smoking cues: evidence from functional magnetic resonance imaging. *Am J Psychiatry*. 2002;159: 954–60.
21. Janes AC, Farmer S, Frederick BD, Nickerson LD, Lukas SE. An increase in tobacco craving is associated with enhanced medial prefrontal cortex network coupling. *PLoS One*. 2014;9(2):88228.
22. Wang Z, Faith M, Patterson F, Tang K, Kerrin K. Neural substrates of abstinence-induced cigarette cravings in chronic smokers. *J Neurosci*. 2007;27: 14035–40.
23. Fregni F, Liguori P, Fecteau S, Nitsche MA, Pascual-Leone A, Boggio PS. Cortical stimulation of the prefrontal cortex with transcranial direct current stimulation reduces cue-provoked smoking craving: a randomized, sham-controlled study. *J Clin Psychiatry*. 2008;69(1):32–40.
24. Boggio PS, Liguori P, Sultani N, Rezende L, Fecteau S, Fregni F. Cumulative priming effects of cortical stimulation on smoking cue-induced craving. *Neurosci Lett*. 2009;463(1):82–6.
25. Fecteau S, Agosta S, Hone-Blanchet A, Fregni F, Boggio P, Ciraulo D, et al. Modulation of smoking and decision-making behaviors with transcranial direct current stimulation in tobacco smokers: a preliminary study. *Drug Alcohol Depend*. 2014;140: 78–84. 2
26. Meng Z, Liu C, Yu C, Ma Y. Transcranial direct current stimulation of the frontal-parietaltemporal area attenuates smoking behavior. *J Psychiatr Res*. 2014;54:19–25.
27. Xu J, Fregni F, Brody AL, Rahman AS. Transcranial direct current stimulation reduces negative affect but not cigarette craving in overnight abstinent smokers. *Front Psychiatry*. 2013;4:112.
28. Boggio PS, Zaghi S, Villani AB, Fecteau S, Pascual-Leone A, Fregni F. Modulation of risk-taking in marijuana users by transcranial direct current stimulation (tDCS) of the dorsolateralprefrontal cortex (DLPFC). *Drug Alcohol Depend*. 2010;112(3):220–5.
29. George MS, Anton RF, Bloomer C, Teneback C, Drobles DJ, Lorberbaum JP. Activation of prefrontal cortex and anterior thalamus in alcoholic subjects on exposure to alcohol-specific cues. *Arch Gen Psychiatry*. 2001;58(4):345–52.
30. Boggio PS, Zaghi S, Villani AB, Fecteau S, Pascual-Leone A, Fregni F. Prefrontal cortex modulation using transcranial DC stimulation reduces alcohol craving: a double-blind, sham-controlled study. *Drug Alcohol Depend*. 2008;92(1-3):55–60.
31. Klauss J, Penido Pinheiro LC, Silva Merlo BL, de Almeida Correia Santos G, Fregni F, Nitsche MA, et al. A randomized controlled trial of targeted prefrontal cortex modulation with tDCS in patients with alcohol dependence. *Int J Neuropsychopharmacol*. 2014;17(11):1793–803.
32. den Uy TE, Gladwin TE, Wiers RW. Transcranial direct current stimulation, implicit alcohol associations and craving. *Biol Psychol*. 2015;105:37–42.
33. Culbertson C, Nicolas S, Zaharovits I, London ED, De La Garza R, Brody AL, et al. Methamphetamine craving induced in an online virtual reality environment. *Pharmacol Biochem Behav*. 2010;96(4):454–60.
34. Breiter HC, Gollub RL, Weisskoff RM, Kennedy DN, Makris N, Berke JD, et al. Acute effects of cocaine on human brain activity and emotion. *Neuron*. 1997;19(3):591–611.
35. Garavan H, Stout JC. Neurocognitive insights into substance abuse. *Trends Cogn Sci*. 2005;9(4):195–201.

36. Hester R, Garavan H. Executive dysfunction in cocaine addiction: evidence for discordant frontal, cingulate, and cerebellar activity. *J Neurosci*. 2004; 24:11017–22.
37. Volkow ND, Wang GJ, Fowler JS, Hitzemann R, Angrist B, Gatley SJ, et al. Association of methylphenidate- induced craving with changes in right striato-orbitofrontal metabolism in cocaine abusers: implications in addiction. *Am J Psychiatry*. 1999;156(1):19–26.
38. Wang GJ, Volkow ND, Fowler JS, Cervany P, Hitzemann RJ, Pappas NR, et al. Regional brain metabolic activation during craving elicited by recall of previous drug experiences. *Life Sci*. 1999;64(9): 775–84.
39. Wexler BE, Gottschalk CH, Fulbright RK, Prohovnik I, Lacadie CM, Rounsaville BJ, et al. Functional magnetic resonance imaging of cocaine craving. *Am J Psychiatry*. 2001;158(1):86–95.
40. Conti CL, Nakamura-Palacios EM. Bilateral transcranial direct current stimulation over dorsolateral prefrontal cortex changes the drug-cue reactivity in the anterior cingulate cortex of crack-cocaine addicts. *Brain Stimul*. 2014;7(1):130–2.
41. Conti CL, Moscon JA, Fregni F, Nitsche MA, Nakamura-Palacios EM. Cognitive related electrophysiological changes induced by non-invasive cortical electrical stimulation in crack-cocaine addiction. *Int J Neuropsychopharmacol*. 2014;17(9): 1465–75.
42. Batista EK, Klauss J, Fregni F, Nitsche MA, Nakamura-Palacios EM. A randomized placebo-controlled trial of targeted prefrontal cortex modulation with bilateral tDCS in patients with crack-cocaine dependence. *Int J Neuropsychopharmacol*. 2015;18(12):pii:pyv066.
43. Gorini A, Lucchiari C, Russell-Edu W, Pravettoni G. Modulation of risky choices in recently abstinent dependent cocaine users: a transcranial direct-current stimulation study. *Front Hum Neurosci*. 2014;8:661.
44. Shahbabaie A, Golesorkhi M, Zamanian B, Ebrahimpour M, Keshvari F, Nejati V, et al. State dependent effect of transcranial direct current stimulation (tDCS) on methamphetamine craving. *Int J Neuropsychopharmacol*. 2014;17:1591–8.
45. Bechara A, Dolan S, Denburg N, Hindes A, Anderson SW, Nathan PE. Decision-making deficits, linked to a dysfunctional ventromedial prefrontal cortex, revealed in alcohol and stimulant abusers. *Neuropsychologia*. 2001;39:376–89.
46. Epstein JA, Bang H, Botvin GJ. Which psychosocial factors moderate or directly affect substance use among inner-city adolescents? *Addict Behav*. 2007;32:700–13.
47. Grant S, Contoreggi C, London ED. Drug abusers show impaired performance in a laboratory test of decision making. *Neuropsychologia*. 2000;38:1180–7.
48. Lejuez CW, Aklin WM, Jones HA, Strong DR, Kahler CW, Read JP. The balloon analogue risk task (BART) differentiates smokers and nonsmokers. *Exp Clin Psychopharmacol*. 2003;11:26–33.
49. Perry JL, Carroll ME. The role of impulsive behavior in drug abuse. *Psychopharmacology (Berl)*. 2008; 200(1):1–26.
50. Krain AL, Wilson AM, Arbuckle R, Castellanos FX, Milham MP. Distinct neural mechanisms of risk and ambiguity: a meta-analysis of decision-making. *Neuroimage*. 2006;32:477–84.
51. Tanabe J, Thompson L, Claus E, Dalwani M, Hutchison K, Banich MT. Prefrontal cortex activity is reduced in gambling and nongambling substance users during decision-making. *Hum Brain Mapp*. 2007;28(12):1276–86.
52. de Wit H, Richards JB. Dual determinants of drug use in humans: reward and impulsivity. *Nebr Symp Motiv*. 2004;50:19–55.

53. Ditye T, Jacobson L, Walsh V, Lavidor M. Modulating behavioral inhibition by tDCS combined with cognitive training. *Exp Brain Res.* 2012;219(3):363–8.
54. Jacobson L, Javitt DC, Lavidor M. Activation of inhibition: diminishing impulsive behavior by direct current stimulation over the inferior frontal gyrus. *J Cogn Neurosci.* 2011;23(11):3380–7.
55. S tramaccia DF, Penolazzi B, Sartori G, Braga M, Mondini S, Galfano G. Assessing the effects of tDCS over a delayed response inhibition task by targeting the right inferior frontal gyrus and right dorsolateral prefrontal cortex. *Exp Brain Res.* 2015;233(8):2283–90.
56. Fecteau S, Knoch D, Fregni F, Sultani N, Boggio PS, Pascual-Leone A. Diminishing risk-taking behavior by modulating activity in the prefrontal cortex. A direct current stimulation study. *J Neurosci.* 2007;27:12500–5.
57. Fecteau S, Pascual-Leone A, Zald D, Liguori P, Théoret H, Boggio PS. Activation of prefrontal cortex by transcranial direct current stimulation reduces appetite for risk during ambiguous decision making. *J Neurosci.* 2007;27:6212–8.
58. Iudicello JE, Woods SP, Vigil O, Scotte JC, Cherner M, Heaton RK, et al. Longer term improvement in neurocognitive functioning and affective distress among methamphetamine users who achieve stable abstinence. *J Clin Neuropsychol.* 2010;32(7):704–18.
59. Munro CA, Saxton J, Butters MA. The neuropsychological consequences of abstinence among older alcoholics: a cross-sectional study. *Alcohol Clin Exp Res.* 2006;24(10):1510–6.
60. Wang GI, Volkow ND, Chang L, Miller E, Sedler ND, Hitzemann R, et al. Partial recovery of brain metabolism in methamphetamine abusers after protracted abstinence. *Am J Psychiatry.* 2004;161(2):242–8.
61. Tiffany ST, Drobes DJ. The development and initial validation of a questionnaire on smoking urges. *Br J Addict.* 1991;86:1467–76.
62. American Psychiatric Association (2013) *Diagnostic and statistical manual of mental disorders: DSM-V* Washington, DC: American Psychiatric Association