

Curriculum vitae



Name: Lukas Jan Volz, M.D.
Date of birth: 04/03/1985
Place of birth: Cologne, Germany
Nationality: German

Education

2004 - 2005	Study of Mathematics & Physics at the University of Cologne
2005 - 2011	Study of Medicine at Ruhr-University Bochum (Germany), the University of Stellenbosch (South Africa) and the National University of Singapore (Singapore)
2011	Final medical examination

Research

2008 - 2011	Department for Neurophysiology, Ruhr-University Bochum, Germany (<i>Prof. UT Eysel / Prof. D Manahan-Vaughan</i>) Transcranial magnetic stimulation Group (<i>Prof. K Funke</i>)
2012	Medical dissertation: "Dose-dependence of changes in cortical protein expression induced with repeated transcranial magnetic theta-burst stimulation in the rat"
2012 - 2015	Department of Neurology (<i>Prof. GR Fink</i>), Cologne University Hospital
2012 - 2015	Post-doctoral fellow: Max Planck Institute for neurological Research, Cologne Neuromodulation and Neurorehabilitation Group (<i>Prof. C Grefkes</i>)
2015 - 2017	Post-doctoral fellow: University of California, Santa Barbara, USA UCSB Brain Imaging Center (<i>Prof. ST Grafton</i>)
2015 - 2017	SAGE Junior Research Fellow: SAGE Center for the Study of the Mind, University of California, Santa Barbara, USA (<i>Prof. MS Gazzaniga</i>)
since 10/2017	Department of Neurology (<i>Prof. GR Fink</i>), Cologne University Hospital

Publications

Peer-reviewed publications (h-Index: 12, google scholar):

1. **Volz LJ**, Benali A, Mix A, Neubacher U, Funke K (2013) Dose-dependence of changes in cortical protein expression induced with repeated transcranial magnetic theta-burst stimulation in the rat. *Brain Stimulation* 6(4):598-606
2. **Volz LJ**, Grefkes C (2013) Neurophysiological and Neuroimaging Predictors of Functional Recovery after Stroke. *Klinische Neurophysiologie* 44:238-246
3. Cárdenas-Morales L*, **Volz LJ***, Rehme AK, Pool EM, Nettekoven C, Eickhoff SB, Fink GR, Grefkes C (2014) Network Connectivity and Individual Responses to Brain Stimulation in the Human Motor System. *Cerebral Cortex* 24(7):1697-707 (*shared first-authorship)
4. Nettekoven C, **Volz LJ**, Kutscha M, Pool EM, Rehme AK, Eickhoff SB, Fink GR, Grefkes C (2014) Dose-dependent effects of theta-burst rTMS on cortical excitability and resting-state connectivity of the human motor system. *Journal of Neuroscience* 34(20):6849-59
5. **Volz LJ**, Sarfeld AS, Diekhoff S, Rehme AK, Pool EM, Eickhoff SB, Fink GR, Grefkes C (2015) Motor Cortex Excitability and Connectivity in chronic stroke – A multimodal model of functional reorganization. *Brain Structure and Function* 220(2):1093-107
6. Rehme AK, **Volz LJ**, Feis DL, Bomilcar-Focke I, Liebig T, Eickhoff SB, Fink GR, Grefkes C (2015) Identifying neuroimaging markers of motor disability in acute stroke by machine learning techniques. *Cerebral Cortex* 25(9):3046-56
7. **Volz LJ**, Hamada M, Rothwell JC, Grefkes C (2015) What makes the muscle twitch: motor system connectivity and TMS-induced activity. *Cerebral Cortex* 25(9):2346-53
8. Michely J, **Volz LJ**, Barbe M, Hoffstaedter F, Viswanathan S, Timmermann L, Eickhoff SB, Fink GR, Grefkes C (2015) Dopaminergic modulation of motor network dynamics in Parkinson's disease. *Brain* 138(Pt 3):664-78
9. Nettekoven C, **Volz LJ**, Leimbach M, Pool EM, Rehme AK, Eickhoff SB, Fink GR, Grefkes C (2015) Inter-individual variability in cortical excitability and motor network connectivity following multiple blocks of rTMS. *NeuroImage* 118: 209–218
10. **Volz LJ**, Eickhoff SB, Pool EM, Fink GR, Grefkes C (2015) Differential Modulation of Motor Network Connectivity during Movements of the Upper and Lower Limbs. *NeuroImage* 119: 44–53
11. Rehme AK, **Volz LJ**, Feis DL, Eickhoff SB, Fink GR, Grefkes C (2015) Early neuroimaging predictors of chronic motor disability after stroke. *Human Brain Mapping* 36(11):4553-65
12. Krall SC, **Volz LJ**, Oberwelland E, Grefkes C, Fink GR, Konrad K (2016) The right temporoparietal junction in attention and social interaction: A transcranial magnetic stimulation study. *Human Brain Mapping*, 37(2), 796-807
13. **Volz LJ**, Rehme AK, Michely J, Nettekoven C, Eickhoff SB, Fink GR, Grefkes C (2016) Shaping Early Reorganization of Neural Networks Promotes Motor Function after Stroke. *Cerebral Cortex* 26(6):2882-2894

14. **Volz LJ**, Gazzaniga MS (2017) Interaction in isolation - 50 years of insights from split-brain research. *Brain* 140 (7): 2051-2060
15. **Volz LJ**, Welborn LB, Gobel MS, Gazzaniga MS, Grafton ST (2017) Harm to self outweighs benefit to others in moral decision making. *Proceedings of the Nation Academy of Sciences* 114 (30): 7963-7968
16. Pedrosa DJ, Nelles C, Brown P, **Volz LJ**, Pelzer EA, Tittgemeyer M, Brittain JS, Timmermann L (2017) The differentiated networks related to Essential tremor onset and its amplitude modulation after alcohol intake. *Experimental Neurology* 297: 50–61
17. **Volz LJ**, Vollmer M, Michely J, Fink GR, Grefkes C, Rothwell JC, Grefkes C (2017) Time-dependent functional role of the contralesional motor cortex after stroke. *NeuroImage: Clinical* 16: 165-174
18. Michely J, **Volz LJ**, Hoffstaedter F, Eickhoff SB, Fink GR, Grefkes C (2018) Network connectivity of motor control in the ageing brain. *NeuroImage: Clinical* 18: 443-455
19. **Volz LJ**, Cieslak M, Grafton ST (2018) Compartmentalizing white matter reduces profound variability of anisotropy measures. *Brain Structure and Function* 223(2), 635-651
20. Cohrs G, Huhndorf M, Niemczyk N, **Volz LJ**, Bernsmeier A, Singhal A, Larsen N, Synowitz M, Knerlich-Lukoschus F (2018) MRI in mild pediatric traumatic brain injury: diagnostic overkill or useful tool? *Child's nervous system* 34 (7), 1345-1352
21. **Volz LJ**, Hillyard SA, Miller MB, Gazzaniga MS (2018) Unifying control over the body: consciousness and cross-cueing in split-brain patients. *Brain* 141 (3), e15
22. Cieslak M, Brennan T, Meiring W, **Volz LJ**, Asturias A, Surib S, Grafton ST (2018) Analytic tractography: A closed-form solution for estimating local white matter connectivity with diffusion MRI. *NeuroImage* 169: 473–484
23. Cieslak M, Meiring W, Brennan T, Greene C, **Volz LJ**, Vettel JM, Suri S, Grafton ST (2018) Compositional measures of diffusion anisotropy and asymmetry. *Biomedical Imaging (ISBI 2018), IEEE 15th International Symposium*: 123-126
24. **Volz LJ**, Kocher M, Lohmann P, Shah NJ, Fink GR, Galldiks N (2018) Functional magnetic resonance imaging in glioma patients: from clinical applications to future perspectives. *The quarterly journal of nuclear medicine and molecular imaging* 62(3):295-302
25. Layher E, Santander T, **Volz LJ**, Miller MB (2018) Failure to affect decision criteria during recognition memory with continuous theta burst stimulation. *Frontiers in Neuroscience* 12: 705
26. **Volz LJ**, Hamada M, Rothwell JC, Grefkes C (*under review*) What makes the muscle twitch more: a multimodal model of plasticity induction

Book chapters:

1. **Volz LJ** & Grefkes C (2016) Basic Principles of rTMS in Motor Recovery After Stroke. *In: Therapeutic rTMS in Neurology* (pp. 23-37). Springer International Publishing.
2. Grafton ST & **Volz LJ** (*in press*) From Ideas to Action: The prefrontal-premotor connections that shape motor behavior. *In: The Frontal Lobe* (edited by Grafman J & D'Esposito MT). *Handbook of Clinical Neurology*.

Invited Talks (selection):

- "Imaging cortical reorganization after stroke", *Erwin L. Hahn fMRI Workshop 2013 (09/18/2013 Essen, Germany)*
- "Theta burst transcranial magnetic stimulation in subacute stroke: an fMRI study", *20th Annual Meeting of the Organization for Human Brain Mapping 2014 (06/12/2014 Hamburg, Germany)*
- "Translational approaches in stroke research", *2. NRW-Forum: Sensorimotor Rehabilitation (07/02/2014 Bochum, Germany)*
- "Theta Burst Transkranielle Magnetstimulation bei subakutem Schlaganfall: eine fMRT-Studie", *87th annual meeting of the German society for Neurology 2014 (09/18/2014 Munich, Germany)*
- "Repetitive TMS in subacute stroke", *44th Annual Meeting of Japanese Society of Clinical Neurophysiology 2014 (11/19/2014 Fukuoka, Japan)*
- "System plasticity and functional recovery: new insights from functional neuroimaging", *5th joined Conference of the German Society for Neurorehabilitation and the German Society for Neurotraumatology and Clinical Neurorehabilitation 2014 (12/5/2014 Singen, Germany)*
- "Modulating the lesioned brain – a mechanistic approach to the clinical utilization of rTMS in stroke", *59th annual meeting of the German society for clinical neurophysiology and functional imaging 2015 (03/19/2015 Tübingen, Germany)*
- "What makes the muscle twitch -The motor network and TMS", *The Cognition and Action Lab, University of California, Berkeley (09/08/2015 Berkeley, USA)*
- "Neuromodulation of the lesioned brain – a mechanistic treatment approach for stroke", *88th annual meeting of the German society for Neurology 2015 (09/23/2015 Düsseldorf, Germany)*
- "rTMS in Neurorehabilitation – What's new?", *60th annual meeting of the German society for clinical neurophysiology and functional imaging 2016 (03/17/2016 Düsseldorf, Germany)*
- "Connectivity and neuromodulation of the motor system", *60th annual meeting of the German society for clinical neurophysiology and functional imaging 2016 (03/19/2016 Düsseldorf, Germany)*
- "Assessing white matter integrity of the corticospinal tract", *University of California, Santa Barbara (09/30/2016, Santa Barbara, USA)*
- "Monetary incentives differentially modulate fast and slow motor learning", *Neuroscience 2016 (11/15/2016 San Diego, USA)*
- "Converging perspectives? Evaluation of post-stroke plasticity by TMS and fMRI", *UC Davis Center for Mind & Brain (12/02/2016 Davis, USA)*
- "Egoistic Altruists – approach/avoid decision making in a social context", *Princeton Neuroscience Institute (01/13/2017 Princeton, USA)*
- "Egoistic Altruists – approach/avoid decision making in a social context", *Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology (01/18/2017 Cambridge, USA)*

Reviewing activities for:

Brain Research

Brain Stimulation

Brain Structure and Function

Clinical Neuroradiology

Experimental Brain Research

Nature Communications

Neural Plasticity

NeuroImage

NeuroImage: Clinical

Neuropsychologia

NeuroReport

Neuroscience

Physiotherapy Theory and Practice

Teaching

2009 – 2010	Practical course: Neurophysiology for medical students (focus: EEG), <i>Ruhr-University Bochum</i>
2012 – 2015 & since 2017	Clinical neurological examination for medical students, <i>University of Cologne</i>
2012	Introduction to neuroscience. <i>Institute for Criminology, University Münster</i>
2013	Introduction to transcranial magnetic stimulation, <i>Master of Neuroscience program, University of Cologne</i>
2014	Transcranial magnetic stimulation of the human motor system, <i>Cologne Summer School and practical course on Neural circuit analysis, Graduate School for Biological Sciences, University of Cologne</i>
2015	Introduction to Transcranial magnetic stimulation, <i>Summer Institute in Cognitive Neuroscience, UCSB, Santa Barbara, USA</i>
2016	Graduate student seminar: "Introduction to cognitive neuroscience" with Prof. M Gazzaniga, <i>UCSB, Santa Barbara, USA</i>
	Graduate student seminar: "Advanced analysis of neuroimaging data", <i>UCSB, Santa Barbara, USA</i>
	"Introduction to Transcranial magnetic stimulation", <i>Summer Institute in Cognitive Neuroscience, UCSB, Santa Barbara, USA</i>

"Dynamic causal modeling", *Summer Institute in Cognitive Neuroscience, UCSB, Santa Barbara, USA*

Workshop on Transcranial Magnetic Stimulation, *University of California, Davis, USA*

2017 "Introduction to Transcranial magnetic stimulation", *Summer Institute in Cognitive Neuroscience, UCSB, Santa Barbara, USA*

"Dynamic causal modeling", *Summer Institute in Cognitive Neuroscience, UCSB, Santa Barbara, USA*

2018 "Blockpraktikum: Neurologie", *University of Cologne*

Scholarships

2008 – 2011 Scholar of the German National Academic Foundation
("Studienstiftung des deutschen Volkes")

2013 Travel scholarship for the 19th Annual Meeting of the Organization for Human Brain Mapping (Seattle, USA) by the German Academic Exchange Service (DAAD)

2014 Travel Award of the Organization for Human Brain Mapping

Personal skills

Language skills: German, English, French

Interests: Sports, especially basketball: German Streetball Champion 2003, participated in the Moscow Open 2008 (Streetball World Championship) for Germany
Scuba diving
Music (guitar and violin)



Cologne, February 3rd 2019

Lukas J. Volz, M.D.