

Tom Rhys Marshall

Curriculum Vitae

Department for Experimental Psychology
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ACADEMIC EXPERIENCE

11/2016 - present Post-doctoral Research Associate
Department of Experimental Psychology, University of Oxford

02/2016 - 10/2016 Post-doctoral Research Associate
Donders Institute, Radboud University Nijmegen, NL

EDUCATION

2011 - 2016 *Degree:* PhD – cum laude*
Title: On the Control and Manipulation of Alpha and Gamma Oscillations in Visual Cortex
Field: Cognitive Neuroimaging
Institution: Donders Institute, Radboud University Nijmegen, NL
Supervisors: Ole Jensen, Til Ole Bergmann

2008 - 2011 *Degree:* MSc – cum laude
Field: Brain & Cognitive Sciences
Institution: Universiteit van Amsterdam, NL
Supervisors: Heleen Slagter, Mike X. Cohen

2002 - 2005 *Degree:* BSc – 1st Class Honours
Field: Psychology
Institution: Cardiff University, UK
Supervisor: Ulrike Hahn

*The ‘cum laude’ honorific is the highest distinction for a Dutch PhD, awarded to the top 5% of candidates.

FELLOWSHIPS & GRANTS

07/2016 Rubicon Individual Fellowship
The neural microstructure of top-down control - A basis for personalised interventions.
Amount: €158'000. Period: 12/2016-12/2018. Source: NWO (Dutch scientific research council).

AWARDS & HONOURS

07/2017 PLOS Early Career Travel Award - \$500 to attend ICON, Amsterdam

09/2015 Radboud University Internationalisation Fund Travel Award - €1500 to attend SfN, Chicago

09/2014 Radboud University Internationalisation Fund Travel Award - €1500 to attend SfN, Washington DC

11/2013 Donders Discussions 2013 – Best Poster prize

11/2012 Spatial attention workshop, Tuebingen, DE – Travel award.

ACADEMIC PAPERS

Marshall, T.R., den Boer, S., Cools, R., Jensen, O., Fallon, S.J., & Zumer, J.M. (2018) Occipital Alpha and Gamma Oscillations Support Complementary Mechanisms for Processing Stimulus Value Associations *Journal of Cognitive Neuroscience*.

Brinkman, L., Stolk, A., **Marshall, T.R.**, Esterer, S., Sharp, P., Dijkerman, H.C., de Lange, F.P., & Toni, I. (2016) Independent causal contributions of alpha- and beta-band oscillations during movement selection. *The Journal of Neuroscience*, 36(33), 8726-8733.

Marshall, T.R., Esterer, S., Herring, J.D., Bergmann, T.O., & Jensen, O. (2016) On the relationship between cortical excitability and visual oscillatory responses – a concurrent tDCS-MEG study. *NeuroImage*, 140, 41-49.

Marshall, T.R., Bergmann, T.O., & Jensen, O. (2015) Fronto-parietal structural connectivity mediates the top-down control of neuronal synchronization associated with selective attention. *PLoS Biology*. 13(10): e1002272. doi: 10.1371/journal.pbio.1002272

Jensen, O., Bonnefond, M., **Marshall, T.R.**, & Tiesinga, P.H.E. (2015) Oscillatory mechanisms of feedforward and feedback visual processing. *Trends in Neurosciences*. 38(4), 192-194.

Marshall, T.R., O’Shea, J.S., Jensen, O., & Bergmann, T.O. (2015) Frontal eye fields control attentional modulation of alpha and gamma oscillations in contralateral occipito-parietal cortex. *The Journal of Neuroscience*, 35(4), 1638-1647.

ACADEMIC PAPERS IN SUBMISSION OR REVISION

D’Andrea, A., Chella, F., **Marshall, T.R.**, Pizzella, V., Romani, G.L., Jensen, O., & Marzetti, L. Alpha band connectivity supports inhibition associated with Visuo-Spatial Attention via Superior Longitudinal Fasciculus.

Herring, J.D., Esterer, S., **Marshall, T.R.**, Jensen, O., & Bergmann, T.O. Low-frequency alternating current stimulation rhythmically suppresses stimulus-induced gamma-band oscillations in early visual cortex and impairs perceptual performance.

Mazzetti, C., **Marshall, T.R.**, Staudigl, T., Zumer, J.M., Fallon, S.J. & Jensen, O. Hemispheric Asymmetry of Globus Pallidus Predicts Reward-related Posterior Alpha Modulation.

INVITED TALKS

Marshall, T.R. (2016) *Top-down control of visual attention: Known knowns and known unknowns*. Centre for Human Brain Health, University of Birmingham, UK.

Marshall, T.R. (2016) *Top-down control of visual alpha and gamma oscillations and attention*. Department of Neurosurgery, Columbia University Medical Center, New York, NY, USA.

Marshall, T.R. (2016) *On the control and manipulation of alpha and gamma oscillations in visual cortex*. Department of Psychology, University of Cambridge, UK.

Marshall, T.R., Bergmann, T.O., & Jensen, O. (2015) *The link between the dorsal attention network and posterior alpha and gamma oscillations*. ‘Disentangling the brain web’, ITAB, Chieti, IT.

Marshall, T.R. (2015) *On the control and manipulation of alpha and gamma oscillations in visual cortex*. Department of Experimental Psychology, University of Oxford, UK.

TALKS AT SCIENTIFIC CONFERENCES

Marshall, T.R., den Boer, S., Cools, R., Jensen, O., Fallon, S.J., & Zumer, J.M. (2015) *Alpha and gamma oscillations support parallel mechanisms for processing stimulus-value associations*. Annual meeting of the Society for Neuroscience 2015, Chicago, IL, USA.

Marshall, T.R., den Boer, S., Cools, R., Jensen, O., Fallon, S.J., & Zumer, J.M. (2015) *Alpha, gamma, and reward*. MEG UK 2015, Birmingham, UK.

Marshall, T.R., Bergmann, T.O., & Jensen, O. (2014) *Frontoparietal structural connectivity predicts individual differences in top-down modulation of visual cortical oscillations*. Annual meeting of the Society for Neuroscience 2014, Washington, DC, USA.

Marshall, T.R., Bergmann, T.O., & Jensen, O. (2014) *Top-down control of visual cortical oscillations by the frontoparietal network*. Annual Meeting of the Cognitive Neuroscience Society, Boston, MA, USA.

SELECTED POSTERS

Marshall, T.R., & O'Reilly, J.X. (2017) *Stable and competitive dynamics within the dorsal attentional network*. ICON, Amsterdam, NL.

Marshall, T.R., Esterer, S., Herring, J.D., Bergmann, T.O., & Jensen, O. (2015) *The link between cortical excitability and visual oscillatory responses – a concurrent tDCS-MEG study*. MEG Symposium, Tuebingen, DE.

Marshall, T.R., Fallon, S.J., den Boer, S., Cools, R.C., Zumer, J.M., & Jensen, O. (2015) *Alpha, gamma, and reward*. MEG UK, Birmingham, UK.

Marshall, T.R., Jensen, O., & Bergmann, T.O. (2014). *A causal role for FEF in top-down control of alpha and gamma oscillations during attentional allocation*. MEG UK, Nottingham, UK.

Marshall, T.R., Jensen, O., & Bergmann, T.O. (2013). *The role of FEF in top-down control of alpha oscillations: A TMS and MEG study*. 5th International Conference on Non-Invasive Brain Stimulation. Leipzig, DE.

Marshall, T.R., Bergmann, T.O., & Jensen, O. (2013) *Structural contributions to attentional modulation of posterior alpha power*. Donders Discussions, Nijmegen, NL.

Marshall, T.R., Jensen, O., & Bergmann, T.O. (2012). *fMRI-guided TMS of Frontal Eye Fields attenuates top-down modulation of posterior alpha rhythms*. 18th International Conference on Biomagnetism, Paris, FR.

TEACHING, SUPERVISION AND MENTORING EXPERIENCE

2013 - 2016

Lecturer

Topics: Brain stimulation and neuroimaging,
Physics and Mechanisms of transcranial current stimulation.
As part of: Donders Toolkit for Non-invasive Brain Stimulation.

2013 - 2016

Master student supervision

Supervised two MSc thesis projects (approx. ten months) and two MSc lab rotations (one month).

2013 - 2014

Guest Lecturer

Topic: An introduction to Transcranial Brain Stimulation.
As part of: Courses 'Neuromarketing', and 'Wider implications of Cognitive Neuroscience.'

2011 - 2016

Demonstrator: Data analysis practicals

Assisted students (at bachelor and master and doctoral level) in analysis of neuroimaging data as part of various university courses.

2011 - 2014 **PhD Job: TMS lab demonstrations**
Hands-on demonstrations of brain stimulation principles and approaches to diverse audiences (high school to PhD / research scientist level). Over 50 demos given.

ORGANISATIONAL EXPERIENCE

2015-present **Toolkit organizer**
Donders Toolkit for Non-invasive Brain Stimulation: An annual four-day training course for 30 delegates involving hands-on training, teaching, and keynote lectures from international experts.

02/2016 **Symposium organizer**
Topic: Top-down control and transcranial manipulation of neuronal oscillations.
As part of: PhD defense, Nijmegen, NL

04/2014 **Symposium organizer**
Topic: Oscillatory mechanisms of attentional control.
As part of: Annual Meeting of the Cognitive Neuroscience Society, Boston, MA, USA.

11/2013 **Symposium organizer**
Topic: Visual attention: Mechanisms and manipulations.
As part of: Donders Discussions 2013, Nijmegen, NL.

2011 - 2014 **Brain Stimulation lab co-ordinator**
Part of team of experts responsible for design of new Donders BrainStim lab (budget €300'000), purchase, installation and setup of lab equipment, and ongoing lab maintenance.

NON-ACADEMIC EXPERIENCE

2015 **Scientific Advisor to 'Metta Theatre'**
Part of grant-writing and script development team for an independent theatre company
As part of: 'Saccade: One woman's story of seeing the world differently.'
Wellcome Trust Small Arts Award applied for.

INVITED REVIEWER

The Journal of Neuroscience
NeuroImage
Cortex (standard submission and Registered Report)
Journal of Cognitive Neuroscience
eNeuro
Human Brain Mapping
Brain Stimulation
Science Advances
Brain Topography

ONGOING PROJECTS

Marshall, T.R., Ruessler, M., Hunt, L.T., & O'Reilly, J.X. Stable and competitive dynamics within the dorsal attentional network.
Project goal: Decompose dorsal attentional network into nodes subserving different computational subprocesses at different intrinsic timescales using a combination of MEG and biophysical modelling.
Role: Lead researcher; responsible for experiment design, data acquisition, data analysis and manuscript preparation.

Marshall, T.R., Bonnefond, M., Schoffelen, J.M., & Jensen, O. Unravelling functional circuits of visual spatial and feature attention.

Project goal: Improve sensitivity for frontal neural sources using subject-specific MEG headcasts.

Role: Lead researcher; responsible for experiment design, data acquisition, data analysis and manuscript preparation.

Hoogman, M., Onnink, M., Wolfers, T., **Marshall, T.R.**, Franke, B., *et al.* IMpACT2.

Project goal: Large-scale (N=1'000) multimodal neuroimaging and genetics study of persistent ADHD.

Role: Designed and implemented MEG component of acquisition protocol and analysis pipeline.

Rogasch, N.C., Habibollahi Saatlou, F., McNair, N.A., Biabani, M., **Marshall, T.R.**, & Bergmann, T.O. MagPIE: A toolbox for interactive and automated operation of TMS stimulators.

Project goal: Demonstrate toolbox for control of TMS parameters as part of an interactive experimental setup.

Role: Developed parts of toolbox code, assisted in manuscript preparation.

SKILLS

- Neuroimaging methods: MEG, EEG, DTI, fMRI.
- Neurostimulation methods: TMS, tDCS, tACS.
- Strong focus on multimodal approaches; published papers using concurrent tDCS-MEG, combined TMS-fMRI-MEG, combined MEG-DTI. Expertise in concurrent TMS-EEG arising from unpublished projects.
- Software packages: FieldTrip, SPM, FSL, TrackVis, BrainVision suite.
- Languages: English (native), Dutch (fluent).

COURSES AND QUALIFICATIONS

05/2015	Statistical Parametric Mapping for MEG/EEG – London, UK 3-day introduction to SPM including theoretical and hands-on introduction to DCM for MEG data
02/2013	Natbrainlab Neuroanatomy and Tractography workshop – London, UK 4-day course covering technical introduction to diffusion MRI physics, methods and data analysis
05/2012	Fieldtrip toolkit – Nijmegen, NL One-week introduction to fieldtrip, including basic and advanced topics in MEG data analysis
10/2011	Introduction to Transcranial Magnetic Stimulation – Helsinki, FI 4-day course covering all aspects of designing and conducting research with TMS

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