Curriculum Vitae

Thomas Okell

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CONTACT DETAILS

Address:	Wellcome Centre for Integrative Neuroimaging (FMRIB),
	Nuffield Department of Clinical Neurosciences, University of Oxford,
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EDUCATION AND QUALIFICATIONS

2007 – 2011   University of Oxford (Doctoral Degree)
Doctor of Philosophy (DPhil) in MRI Physics

2005 – 2007   University of Birmingham (Masters Degree)
MSc in Medical and Radiation Physics (with distinction)

2001 – 2005   University of Cambridge (Undergraduate Degree)
MSci Natural Sciences (1st class honours)

ACADEMIC POSITIONS

University of Oxford (WIN/FMRIB, NDCN)
Jun 2020 – present   University Research Lecturer and Sir Henry Dale Fellow
Mar 2015 – Jun 2020   University Research Lecturer and Royal Academy of Engineering Research Fellow
Jan 2011 – Feb 2015   Postdoctoral MR Physicist

University of Cambridge (Cognition and Brain Sciences Unit)
Summer 2005   Graduate Research Assistant

OTHER POSITIONS

Mar 2019 – Present   SBGNeuro
Consultant in Protocol Design and Image Analysis

Dec 2013 – Jan 2014 Oxford University Consulting
Consultant MR Physicist

Sep 2005 – Jan 2010 National Health Service (Churchill Hospital, Oxford)
Trainee Medical Physicist

AWARDS

- WIN Good Citizen Award for Teaching (2019)
- British Chapter of the ISMRM Sir Peter Mansfield Prize (2016)
- University Research Lecturer Title (2016)
- International Society for Magnetic Resonance in Medicine (ISMRM) Junior Fellow (2016)
- Nuffield Department of Clinical Neurosciences Award for Excellence (2015)
- MRM Distinguished Reviewer Award (2013-2015,2017-18)
- ISMRM Young Investigator (I. I. Rabi) Award Finalist (2012)
- ISMRM "Summa Cum Laude" Merit Award (2012, 2014, 2015-2017)
- ISMRM "Magna Cum Laude" Merit Award (2012, 2013)

GRANTS

- Wellcome/Royal Society Sir Henry Dale Fellowship (15/06/2020-14/06/2025): "Highly sensitive brain blood flow measurements using ultra-high field magnetic resonance imaging". **Okell TW**. £1.0m (220204/Z/20/Z).
- Oxford University Press John Fell Fund (03/01/2019- 31/03/2020): "Non-invasive Assessment of White Matter Perfusion using Ultra High Field Magnetic Resonance Imaging". **Okell TW**. £6.75k (0006186).
- Royal Academy of Engineering Research Fellowship (1/3/2015-29/2/2020): "A Unified Approach for Non-Invasive Assessment of Brain Blood Supply". **Okell TW**. £580k (RF/132)
- British Heart Foundation Project Grant (1/1/2018 – 31/12/2020): "Adult preterm cerebrovascular phenotype and influence of cardiovascular fitness". Leeson P, Betts J, Williamson W, Lewandowski A, **Okell TW**. £297k (PG/17/13/32860)
- Engineering and Physical Sciences Research Council Project Grant (1/5/2017 –31/10/2020): "Controlling structure induced variations in non-invasive perfusion MRI of neurodegeneration". Chappell MA, **Okell TW**, Mackay CE, Jenkinson M. £821k (EP/P012361/1)
- Medical Research Council Studentship (2007-2011): "Assessment of Collateral Blood Flow in the Brain using Magnetic Resonance Imaging", **Okell TW**, £29k

TEACHING AND SUPERVISION

Teaching

WIN MRI Graduate Program:
Director (2019-present), Director of Physics Education (2014-2019), Lecturer (2010-present), Physics Head Tutor (2009), Tutor (2008, 2011-present)

WIN MRI Advanced Graduate Program (Physics Module):
Organiser (2014-2018), Lecturer (2010-2011,2014,2016,2017)

Oxford-Nottingham Centre for Doctoral Training in Biomedical Imaging:
Lecturer (2014-2017)

University of Oxford Centre for Doctoral Training in Healthcare Innovation:
Lecturer (2013,2014)

University of Oxford Physics Undergraduate Degree:
Medical Physics Option Tutor (2009)

Supervision

Doctoral (DPhil) Projects, Oxford:
- Sophie Schauman, "Accelerated vessel-selective cerebral blood flow imaging using MRI", (co-supervisor, 2017-present, funded by the EPSRC via the ONBI CDT)
- Joseph Woods, "Time-efficient methods for non-invasive brain blood flow imaging using arterial spin labelling MRI", (primary co-supervisor, 2015-2019, funded by the EPSRC via the ONBI CDT)
- Caitlin O'Brien, "Measurement of Localized Oxygen Extraction Fraction in Brain using Magnetic Resonance Imaging" (co-supervisor, 2016-2019, funded by the EPSRC via the ONBI CDT)
- Flora Kennedy-McConnell, "Quantifying collateral flow pathways in the brain" (co-supervisor, 2013-2017, funded by the RCUK Digital Economy Programme)
- Eleanor Berry, "Optimisation of Vessel-Encoded Dynamic Angiography with Arterial Spin Labelling", (primary co-supervisor, 2012-2016, funded by the EPSRC)

Doctoral (PhD) Projects, outside Oxford:
- Yuriko Suzuki, "From the Macro- to the Microvasculature: Temporal and Spatial Visualization using Arterial Spin Labeling" (co-promoter, 2016-2018, based at LUMC, the Netherlands, funded by the EU under the Horizon2020 program project: CDS-QUAMRI, project number 634541)

Masters (MPhys) Projects:
- Robert Mitchell, "Assessment of Compressed Sensing Methods in Speeding up Magnetic Resonance Angiography Data Acquisition" (primary co-supervisor, 2011)

PROFESSIONAL ACTIVITIES

University of Oxford
- Member of the Nuffield Department of Clinical Neurosciences (NDCN) Staff Development Committee (2017-present)
- WIN clinical focus (stroke) champion (2018-19)
- Member of the Athena Swan panel for NDCN (2012-2013)
- Member of the Clinical Neurosciences Society committee (2014-2017)

International Society for Magnetic Resonance in Medicine (ISMRM)
- Member of the Annual Meeting Programme Committee (2017-2020)
- Junior Fellow (2016)
- Web Editorial Board member (2016-17)
- Virtual journal club panel member (2013)
- Member of the perfusion study group (2009 – present)
- Member of the British Chapter (2012-present)

BIDS
- Contributor to the ASL Brain Imaging Data Structure (BIDS) extension initiative (2018 – present)

UK Biobank
- Adviser on image quality and an Arterial Spin Labelling protocol under consideration for adding to the study (2014 – present)

Human Connectome Project
- Adviser on Arterial Spin Labelling protocol design and image analysis (2016)

PATENTS

P1. **Okell TW**. Combined angiography and perfusion using radial imaging and arterial spin labeling. *US Patent Application 62/325,361.* April 2016;

P2. Berry ESK, **Okell TW**, and Jezzard P. Off-resonance Correction for Pseudo-continuous Arterial Spin Labeling. *US Patent Application 62/178,418*. April 2015;

P3. Kennedy McConnell FA, Payne SJ, Chappell MA, and **Okell TW**. Estimation of blood flow rates. *US Patent 10,512,416 B2*. December 2019;

P4. Chappell MA, Woolrich MW, and **Okell TW**. Fast analysis method for non-invasive imaging of blood flow using vessel-encoded arterial spin labelling. *US Patent 9,757,047*. Sep. 2017; *Exclusive license granted to Siemens Healthcare (Erlangen, Germany)*.

P5. **Okell TW**, Chappell MA, and Jezzard P. Quantification of blood volume flow rates from dynamic angiography data. *US Patent 9,501,620*. Nov. 2016; *Exclusive license granted to Siemens Healthcare (Erlangen, Germany)*.

JOURNAL ARTICLES

Preprints

J1. Schauman SS, **Okell TW**, Chiew M. The Set Increment with Limited Views Encoding Ratio (SILVER) Method for Optimizing Radial Sampling of Dynamic MRI. *bioRxiv* 2020. doi:10.1101/2020.06.25.171017.

J2. Raman B, Cassar MP, Tunnicliffe EM, Filippini N, Griffanti L, Alfaro-Almagro F, **Okell TW**, Sheerin F, Xie C, Mahmod M, Mózes FE, Lewandowski AJ, Ohuma EO, Holdsworth D, Lamlum H, Woodman MJ, Krasopoulos C, Mills R *et al.* Medium-term effects of SARS-CoV-2 infection on multiple vital organs, exercise capacity, cognition, quality of life and mental health, post-hospital discharge. *medRxiv* 2020. doi:10.1101/2020.10.15.20205054.

In Press

J3. Germuska M, Chandler HL, **Okell TW**, Fasano F, Tomassini V, Murphy K, Wise RG. A Frequency-Domain Machine Learning Method for Dual-Calibrated fMRI Mapping of Oxygen Extraction Fraction (OEF) and Cerebral Metabolic Rate of Oxygen Consumption (CMRO2). *Front Artif Intell* 2020; 3. doi:10.3389/frai.2020.00012.

Published

J4. Tong Y, Jezzard P, **Okell TW**, Clarke WT. Improving PCASL at ultra-high field using a VERSE-guided parallel transmission strategy. *Magn Reson Med* 2020; 84: 777–786.

J5. Woods JG, Chappell MA, **Okell TW**. Designing and comparing optimized pseudo-continuous Arterial Spin Labeling protocols for measurement of cerebral blood flow. *Neuroimage* 2020; 223: 117246.

J6. Pinto J, Chappell MA, **Okell TW**, Mezue M, Segerdahl AR, Tracey I, Vilela P, Figueiredo P. Calibration of arterial spin labeling data—potential pitfalls in post-processing. *Magn Reson Med* 2020; 83: 1222–1234.

J7. Schauman SS, Chiew M, **Okell TW**. Highly accelerated vessel-selective arterial spin labeling angiography using sparsity and smoothness constraints. *Magn Reson Med* 2020; 83: 892–905.

J8. Msayib Y, Craig M, Simard MA, Larkin JR, Shin DD, Liu TT, Sibson NR, **Okell TW**, Chappell MA. Robust estimation of quantitative perfusion from multi-phase pseudo-continuous arterial spin labeling. *Magn Reson Med* 2020; 83: 815–829.

J9. Berry ESK, Jezzard P, **Okell TW**. The advantages of radial trajectories for vessel-selective dynamic angiography with arterial spin labeling. *Magn Reson Mater Physics, Biol Med* 2019; 32: 643–653.

J10. Carone D, Harston GWJ, Garrard J, De Angeli F, Griffanti L, **Okell TW**, Chappell MA, Kennedy J. ICA-based denoising for ASL perfusion imaging. *Neuroimage* 2019; 200: 363–372.

J11. Phellan R, Lindner T, Helle M, Falcão AX, **Okell TW**, Forkert ND. A methodology for generating four-dimensional arterial spin labeling MR angiography virtual phantoms. *Med Image Anal* 2019; 56: 184–192.

J12. Msayib Y, Harston GWJ, Sheerin F, Blockley NP, **Okell TW**, Jezzard P, Kennedy J, Chappell MA. Partial volume correction for quantitative CEST imaging of acute ischemic stroke. *Magn Reson Med* 2019; 82: 1920–1928.

J13. O'Brien C, **Okell TW**, Chiew M, Jezzard P. Volume-localized measurement of oxygen extraction fraction in the brain using MRI. *Magn Reson Med* 2019; 82: 1412–1423.

J14. Larkin JR, Simard MA, Khrapitchev AA, Meakin JA, **Okell TW**, Craig M, Ray KJ, Jezzard P, Chappell MA, Sibson NR. Quantitative blood flow measurement in rat brain with multiphase arterial spin labelling magnetic resonance imaging. *J Cereb Blood Flow Metab* 2019; 39: 1557–1569.

J15. Suri S, Topiwala A, Chappell MA, **Okell TW**, Zsoldos E, Singh-Manoux A, Kivimäki M, Mackay CE, Ebmeier KP. Association of Midlife Cardiovascular Risk Profiles With Cerebral Perfusion at Older Ages. *JAMA Netw Open* 2019; 2: e195776.

J16. Berry ESK, Jezzard P, **Okell TW**. Off-resonance correction for pseudo-continuous arterial spin labeling using the optimized encoding scheme. *Neuroimage* 2019; 199: 304–312.

J17. **Okell TW***, Harston GWJ*, Chappell MA, Sheerin F, Kennedy J, Jezzard P. Measurement of collateral perfusion in acute stroke: a vessel-encoded arterial spin labeling study. *Sci Rep* 2019; 9: 8181. **Joint first authorship.*

J18. Msayib Y, Harston GWJ, Tee YK, Sheerin F, Blockley NP, **Okell TW**, Jezzard P, Kennedy J, Chappell MA. Quantitative CEST imaging of amide proton transfer in acute ischaemic stroke. *NeuroImage Clin* 2019; 23: 101833.

J19. Stone AJ, Harston GWJ, Carone D, **Okell TW**, Kennedy J, Blockley NP. Prospects for investigating brain oxygenation in acute stroke: Experience with a non-contrast quantitative BOLD based approach. *Hum Brain Mapp* 2019; 40: 2853–2866.

J20. Woods JG, Chappell MA, **Okell TW**. A general framework for optimizing arterial spin labeling MRI experiments. *Magn Reson Med* 2019; 81: 2474–2488.

J21. Suzuki Y, **Okell TW**, Fujima N, van Osch MJP. Acceleration of vessel-selective dynamic MR Angiography by pseudocontinuous arterial spin labeling in combination with Acquisition of ConTRol and labEled images in the Same Shot (ACTRESS). *Magn Reson Med* 2019; 81: 2995–3006.

J22. Suzuki Y, van Osch MJP, Fujima N, **Okell TW**. Optimization of the spatial modulation function of vessel-encoded pseudo-continuous arterial spin labeling and its application to dynamic angiography. *Magn Reson Med* 2019; 81: 410–423.

J23. **Okell TW**, Garcia M, Chappell MA, Byrne JV, Jezzard P. Visualizing artery-specific blood flow patterns above the circle of Willis with vessel-encoded arterial spin labeling. *Magn Reson Med* 2019; 81: 1595–1604.

J24. **Okell TW**. Combined angiography and perfusion using radial imaging and arterial spin labeling. *Magn Reson Med* 2019; 81: 182–194.

J25. Suzuki Y, **Okell TW**, Chappell MA, van Osch MJP. A framework for motion correction of background suppressed arterial spin labeling perfusion images acquired with simultaneous multi-slice EPI. *Magn Reson Med* 2019; 81: 1553–1565.

J26. Germuska M, Chandler HL, Stickland RC, Foster C, Fasano F, **Okell TW**, Steventon J, Tomassini V, Murphy K, Wise RG. Dual-calibrated fMRI measurement of absolute cerebral metabolic rate of oxygen consumption and effective oxygen diffusivity. *Neuroimage* 2019; 184: 717-728.

J27. Rowland MJ, Ezra M, Winkler A, Garry P, Lamb C, Kelly M, **Okell TW**, Westbrook J, Wise RG, Douaud G, Pattinson KT. Calcium channel blockade with nimodipine reverses MRI evidence of cerebral oedema following acute hypoxia. *J Cereb Blood Flow Metab* 2019; 39: 285–301.

J28. Donahue MJ, Achten E, Cogswell PM, De Leeuw F-E, Derdeyn CP, Dijkhuizen RM, Fan AP, Ghaznawi R, Heit JJ, Ikram MA, Jezzard P, Jordan LC, Jouvent E, Knutsson L, Leigh R, Liebeskind DS, Lin W, **Okell TW** *et al.* Consensus statement on current and emerging methods for the diagnosis and evaluation of cerebrovascular disease. *J Cereb Blood Flow Metab* 2018; 38: 1391–1417.

J29. Hartkamp NS, Petersen ET, Chappell MA, **Okell TW**, Uyttenboogaart M, Zeebregts CJ, Bokkers RP. Relationship between haemodynamic impairment and collateral blood flow in carotid artery disease. *J Cereb Blood Flow Metab* 2018; 38: 2021–2032.

J30. Williamson W, Lewandowski AJ, Forkert ND, Griffanti L, **Okell TW**, Betts J, Boardman H, Siepmann T, McKean D, Huckstep O, Francis JM, Neubauer S, Phellan R, Jenkinson M, Doherty A, Dawes H, Frangou E, Malamateniou C *et al.* Association of Cardiovascular Risk Factors With MRI Indices of Cerebrovascular Structure and Function and White Matter Hyperintensities in Young Adults. *JAMA* 2018; 320: 665.

J31. Jezzard P, Chappell MA, **Okell TW**. Arterial spin labeling for the measurement of cerebral perfusion and angiography. *J Cereb Blood Flow Metab* 2018; 38: 603–626.

J32. Lin RL, Douaud G, Filippini N, **Okell TW**, Stagg CJ, and Tracey I. Structural Connectivity Variances Underlie Functional and Behavioral Changes During Pain Relief Induced by Neuromodulation. *Sci Rep* 2017; 7: 41603.

J33. Garcia M, **Okell TW**, Gloor M, Chappell MA, Jezzard P, Bieri O, Byrne JV. Feasibility of Flat Panel Detector CT in Perfusion Assessment of Brain Arteriovenous Malformations: Initial Clinical Experience. *Am J Neuroradiol* 2017; 38: 735–739.

J34. Zhao MY, Mezue M, Segerdahl AR, **Okell TW**, Tracey I, Xiao Y, Chappell MA. A systematic study of the sensitivity of partial volume correction methods for the quantification of perfusion from pseudo-continuous arterial spin labeling MRI. *Neuroimage* 2017; 162: 384–397.

J35. Harston GWJ*, **Okell TW***, Sheerin F, Schulz U, Mathieson P, Reckless I, Shah K, Ford GA, Chappell MA, Jezzard P, and Kennedy J. Quantification of Serial Cerebral Blood Flow in Acute Stroke Using Arterial Spin Labeling. *Stroke* 2017; 48: 123-130. *Joint first authorship.*

J36. Frost R, Hess AT, **Okell TW**, Chappell MA, Tisdall MD, van der Kouwe AJW, and Jezzard P. Prospective motion correction and selective reacquisition using volumetric navigators for vessel-encoded arterial spin labeling dynamic angiography. *Magn Reson Med* 2016; 76: 1420-1430.

J37. Miller KL, Alfaro-Almagro F, Bangerter NK, Thomas DL, Yacoub E, Xu J, Bartsch AJ, Jbabdi S, Sotiropoulos SN, Andersson JLR, Griffanti L, Douaud G, **Okell TW**, Weale P, Dragonu I, Garratt S, Hudson S, Collins R, Jenkinson M, Matthews PM, and Smith SM. Multimodal population brain imaging in the UK Biobank prospective epidemiological study. *Nat Neurosci* 2016; 19: 1523-1536.

J38. **Okell TW**, Schmitt P, Bi X, Chappell MA, Tijssen RHN, Sheerin F, Miller KL, and Jezzard P. Optimization of 4D vessel-selective arterial spin labeling angiography using balanced steady-state free precession and vessel-encoding. *NMR Biomed* 2016; 29: 776-786.

J39. Harston GWJ, Tee YK, Blockley N, **Okell TW**, Thandeswaran S, Shaya G, Sheerin F, Cellerini M, Payne S, Jezzard P, Chappell M, and Kennedy J. Identifying the ischaemic penumbra using pH-weighted magnetic resonance imaging. *Brain* 2015; 138: 36-42.

J40. Segerdahl AR, Mezue M, **Okell TW**, Farrar JT, and Tracey I. The dorsal posterior insula subserves a fundamental role in human pain. *Nat Neurosci* 2015; 18: 499-500.

J41. Berry ESK, Jezzard P, and **Okell TW**. An Optimized Encoding Scheme for Planning Vessel-Encoded Pseudocontinuous Arterial Spin Labeling. *Magn Reson Med* 2015; 74: 1248-56.

J42. Hartkamp NS, Helle M, Chappell MA, **Okell TW**, Hendrikse J, Bokkers RPH, and van Osch MJP. Validation of planning-free vessel-encoded pseudo-continuous arterial spin labeling MR imaging as territorial-ASL strategy by comparison to super-selective p-CASL MRI. *Magn Reson Med* 2014; 71: 2059-70.

J43. Zhang K, Herzog H, Mauler J, Filss C, **Okell TW**, Kops ER, Tellmann L, Fischer T, Brocke B, Sturm W, Coenen HH, and Shah NJ. Comparison of cerebral blood flow acquired by simultaneous [15O]water positron emission tomography and arterial spin labeling magnetic resonance imaging. *J Cereb Blood Flow Metab* 2014; 34: 1373-80.

J44. Tee YK, Harston GWJ, Blockley N, **Okell TW**, Levman J, Sheerin F, Cellerini M, Jezzard P, Kennedy J, Payne SJ, and Chappell MA. Comparing different analysis methods for quantifying the MRI amide proton transfer (APT) effect in hyperacute stroke patients. *NMR Biomed* 2014; 27: 1019-29.

J45. Mezue M, Segerdahl AR, **Okell TW**, Chappell MA, Kelly ME, and Tracey I. Optimization and reliability of multiple postlabeling delay pseudo-continuous arterial spin labeling during rest and stimulus-induced functional task activation. *J Cereb Blood Flow Metab* 2014; 34: 1919-27.

J46. Harston GWJ, Batt F, Fan L, **Okell TW**, Sheerin F, Littlewood T, and Kennedy J. Lacunar Infarction Associated with Anabolic Steroids and Polycythemia: A Case Report. *Case Rep Neurol* 2014; 6: 34-37.

J47. **Okell TW**, Chappell MA, and Jezzard P. A theoretical framework for quantifying blood volume flow rate from dynamic angiographic data and application to vessel-encoded arterial spin labeling MRI. *Med Image Anal* 2013; 17: 1025-1036.

J48. **Okell TW**, Chappell MA, Kelly ME, and Jezzard P. Cerebral blood flow quantification using vessel-encoded arterial spin labeling. *J Cereb Blood Flow Metab* 2013; 33: 1716-1724.

J49. Kelly ME, Rowland MJ, **Okell TW**, Chappell MA, Corkill R, Kerr RS, Westbrook J, Jezzard P, and Pattinson KTS. Pseudo-continuous arterial spin labelling MRI for non-invasive, whole-brain, serial quantification of cerebral blood flow following aneurysmal subarachnoid haemorrhage. *Transl Stroke Res* 2013; 4: 710-8.

J50. Hayen A, Herigstad M, Kelly M, **Okell TW**, Murphy K, Wise RG, Pattinson KTS. The effects of

altered intrathoracic pressure on resting cerebral blood flow and its response to visual stimulation. *Neuroimage* 2013; 66: 479–488.

J51. **Okell TW**, Chappell MA, Schulz UG, and Jezzard P. A kinetic model for vessel-encoded dynamic angiography with arterial spin labeling. *Magn Reson Med* 2012; 68: 969-979.

J52. Bulte DP, Kelly M, Germuska M, Xie J, Chappell MA, **Okell TW**, Bright MG, and Jezzard P. Quantitative measurement of cerebral physiology using respiratory-calibrated MRI. *Neuroimage* 2012; 60: 582-91.

J53. Chappell MA, **Okell TW**, Payne SJ, Jezzard P, and Woolrich MW. A fast analysis method for non-invasive imaging of blood flow in individual cerebral arteries using vessel-encoded arterial spin labelling angiography. *Med Image Anal* 2012; 16: 831-839.

J54. Tijssen RHN, **Okell TW**, and Miller KL. Real-time cardiac synchronization with fixed volume frame rate for reducing physiological instabilities in 3D FMRI. *Neuroimage* 2011; 57: 1364-1375.

J55. Miller KL, Tijssen RH, Stikov N, and **Okell TW**. Steady-state MRI: methods for neuroimaging. *Imaging Med* 2011; 3: 93-105.

J56. **Okell TW**, Chappell MA, Woolrich MW, Günther M, Feinberg DA, and Jezzard P. Vessel-encoded dynamic magnetic resonance angiography using arterial spin labeling. *Magn Reson Med* 2010; 64: 698-706.

J57. Bridge H, Hicks SL, Xie J, **Okell TW**, Mannan S, Alexander I, Cowey A, and Kennard C. Visual activation of extra-striate cortex in the absence of V1 activation. *Neuropsychologia* 2010; 48: 4148-54.

J58. Chappell MA, **Okell TW**, Jezzard P, and Woolrich MW. A general framework for the analysis of vessel encoded arterial spin labeling for vascular territory mapping. *Magn Reson Med* 2010; 64: 1529-1539.

J59. Chappell MA, **Okell TW**, Jezzard P, and Woolrich MW. Vascular territory image analysis using vessel encoded arterial spin labeling. *Med Image Comput Comput Assist Interv* 2009; 12: 514-21.

BOOK CHAPTERS

B1. Chappell M, MacIntosh B, **Okell TW**. *Introduction to Perfusion Quantification using Arterial Spin Labelling*. Oxford University Press, 2017 doi:10.1093/oso/9780198793816.001.0001.

B2. Chappell M, **Okell TW**, Jenkinson M. *Short Introduction to MRI Physics for Neuroimaging*. 2017. http://www.fmrib.ox.ac.uk/primers/appendices/mri_physics.pdf

B3. **Okell TW**, Hattingen E, Klein JC, Miller KL. Magnetic Resonance Imaging (MRI) Methods. In: *Diseases of the Spinal Cord*. Springer Berlin Heidelberg: Berlin, Heidelberg, 2015, pp 39–84.

B4. **Okell TW**, Hattingen E, Klein JC, Miller KL. Advanced MRI Methods. In: *Diseases of the Spinal Cord*. Springer Berlin Heidelberg: Berlin, Heidelberg, 2015, pp 85–91.