

Prof. Dr. Inga Katharina Koerte

Professor of Neurobiological Research · Ludwig-Maximilians-Universität (LMU) Munich

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160+

Peer-reviewed publications

48

h-index (Google Scholar)

9,000+

Citations

RESEARCH PROFILE

My research established that repetitive head impacts alter brain microstructure in the absence of diagnosed concussion — a finding that fundamentally changed how risk is conceptualized in contact sports and contributed to policy shifts in soccer heading guidelines internationally. Building on this, my group investigates the biological mechanisms that determine why individuals with comparable exposures diverge toward recovery or neurodegeneration: why some brains resolve injury efficiently, and others accumulate damage silently over years. We use advanced neuroimaging, longitudinal cohort designs, fluid biomarkers, and experimental models to move the field from exposure-based descriptions toward precision models of brain vulnerability and resilience across the lifespan.

A central current focus is NEUROPRECISE, an ERC Starting Grant-funded translational study, in which we identify novel biomarkers of brain injury and recovery in children and adolescents following mild traumatic brain injury. This work — combining longitudinal neuroimaging with fluid biomarker profiling across a prospective pediatric cohort with experimental models of brain injury — is yielding new translational insights into individual biological response trajectories and will establish early biological signatures that predict long-term outcomes, with direct implications for clinical decision-making, and the design of future interventions.

My research has attracted sustained international media attention — including features in The New York Times, Time Magazine, the BBC, ARD, ZDF, Süddeutsche Zeitung, and Frankfurter Allgemeine Zeitung — reflecting its relevance beyond academic neuroscience to public health and policy.

CURRENT POSITIONS

Professor of Neurobiological Research (Tenure) Child and Adolescent Psychiatry, LMU Munich, Germany	2014–
Lecturer in Psychiatry Harvard Medical School, Boston, MA, USA	2016–
Director, cBRAIN Child Brain Research and Imaging in Neuroscience, LMU Munich	2018–
Principal Investigator, German Center for Child and Adolescent Health (DZKJ)	2024–

EDUCATION & KEY QUALIFICATIONS

Habilitation, Multimodal MR Imaging	2013
LMU Munich · Supervisor: Prof. M. Reiser	
Dissertation (Dr. med.), Experimental Surgery	2006
LMU Munich · Supervisor: Prof. W. Mutschler	
Medical Doctor (Staatsexamen)	2006
Medical Faculty, LMU Munich	

ACADEMIC APPOINTMENTS & AFFILIATIONS

Research Associate, Mass General Brigham, Boston, USA	2011–
Faculty Member, International Max Planck Research School of Translational Psychiatry (IMPRS)	2023–
Adjunct Research Scientist, VA Boston Healthcare System, USA	2022–
Adjunct Faculty, Graduate School of Systemic Neuroscience (GSN)	2018–
Founding Member, FAME (Association of Female Professors, Medical Faculty, LMU)	2020–

PREVIOUS POSITIONS

Visiting Professor in Psychiatry, Harvard Medical School	2014–2016
Associate Professor, Experimental Radiology, LMU Munich	2013–2014
Research Fellow (Neuroimaging), Dept. of Psychiatry, HMS	2011–2014
Medical Resident (Radiology), Institute for Clinical Radiology, LMU	2008–2014
Medical Resident (Pediatrics), Dr. von Hauner Children's Hospital, LMU	2006–2008
Postdoctoral Research Fellow (Pediatric Neurophysiology), LMU	2006–2008
Research Trainee (Neuroimaging), Dept. of Psychiatry, HMS	2009
Clinical Fellow (Neuroradiology), Dept. of Neuroradiology, LMU	2011

SCIENTIFIC LEADERSHIP

President, European Neurotrauma Organization (ENO)	2024–
<i>Founding member and Vice-President 2020–2024. Launched ENTER, a European mobility program for early-career researchers.</i>	
Chair, ENIGMA Sports-Related Concussion & Pediatric TBI Initiative	2017–2024
International large-scale neuroimaging consortium.	
Coordinator, ERA-NET Neuron REPIMPACT Consortium	2017–2025
European multinational study on repetitive head impacts in youth athletes.	
Co-Leader, ERA-NET Neuron NEU-VASC Consortium	2020–2024
PI, ERC Starting Grant NEUROPRECISE	2019–2026
PI, NIH R01 – Sex Differences in Sports-Related Concussion	2017–2025
Co-Leader, PROMISE (€12M BMFTR Clinician-Scientist Program)	2026–
Supervisor, Marie Skłodowska-Curie Fellowship	2021

AWARDS & HONORS

Prinzessin Therese von Bayern Prize, Bavarian State Government	2021
Else Kröner Memorial Award, Else Kröner-Fresenius Foundation	2012
Marc Dünzl Young Investigator Award, German Society for Neuroradiology	2013
Mentor of the Year Award, MeCuM Mentor Program, LMU Munich	2010

EDITORIAL & ADVISORY ROLES

Editorial Board Journal of Neurotrauma (European Editor 2021-2024)	current
Editorial Board, Brain Imaging and Behavior	current
Editorial Board, Journal of Neuroimaging	2017-2025

Ad hoc reviewer: NEJM, JAMA, The Lancet, Annals of Neurology, Molecular Psychiatry, and numerous specialty journals. Grant reviewer for competitive programs in Germany, UK, Israel, and Canada.

SELECTED PUBLICATIONS

Foundational discoveries: subclinical brain vulnerability to repetitive head impacts

Koerte IK, Ertl-Wagner B, Reiser M, Zafonte R, Shenton ME. White matter integrity in the brains of professional soccer players without symptomatic concussion. *JAMA*, 2012.

Leadership in international consensus and standards

Manley GT et al. (contributing author). A new characterisation of acute traumatic brain injury: the NIH-NINDS TBI Classification and Nomenclature Initiative. *The Lancet Neurology*, 2025.

Iverson GL et al. (including Koerte IK). Consensus statement on concussion in sport. *British Journal of Sports Medicine*.

NIH/NINDS consensus framework on chronic traumatic encephalopathy (CTE) neuroimaging standards (forthcoming).

Translational and experimental validation

Umeasalugo KE et al., Koerte IK. Mild TBI alters brain and plasma neurosteroid levels in mice. *Neurotrauma Reports*, 2025.

Field synthesis and conceptual advances in repetitive head impacts and concussion

Koerte IK et al. A review of neuroimaging findings in repetitive brain trauma. *Brain Pathology*, 2015.

Koerte IK et al. Sex-related differences in the effects of sports-related concussion: a review. *Journal of Neuroimaging*, 2020.

Koerte IK et al. Diffusion Imaging of Sport-related Repetitive Head Impacts-A Systematic Review. *Neuropsychol Rev*. 2023

Developmental trajectories and heterogeneity after pediatric mild traumatic brain injury

Betz AK et al., Koerte IK. Executive functioning, behavior, and white matter microstructure after pediatric mild TBI. *Psychological Medicine*, 2024.

Betz AK et al., Koerte IK. Sleep disturbances and cognition, behavior, and brain structure in children with mTBI. *JAMA Network Open*, 2026.

Biological modifiers of outcome: stress, sex, and systemic factors

Kaufmann E et al., Koerte IK. War-zone-related stress and limbic gray matter microstructure. *JAMA Network Open*, 2022.

Rojczyk P et al., Koerte IK. Posttraumatic survivor guilt and white matter microstructure. *Journal of Affective Disorders*, 2024.

GRANT FUNDING

Current

Project	Funder	Amount (€)	Period	Role
NEUROPRECISE – Precision medicine in TBI using individual neurosteroid response	ERC Starting Grant	€1.500.000	2019–2026	PI
Blood Biomarkers for Sex Differences in Sports-Related Concussion	Abbott Inc.	€350.000	2018–2028	PI
REBRAIN – The Resilient Brain: Predicting and Preventing Brain Disease	LMU excellent	€50.000	2026	PI
PROMISE – Advanced Clinician Scientist Program for Comprehensive Neuroscience	BMFTR	€12.000.000	2026–2036	PI

Completed

Project	Funder	Amount (€)	Period	Role
Sex Difference in Brain Structure and Function After Sports-Related Concussion (R01NS100952)	NINDS/NIH	€3.500.000	2017–2025	PI
REPIMPACT – Repetitive Head Impacts on Brain Structure and Function in Youth Athletes	ERA-NET Neuron	€1.500.000	2017–2020	PI
NEUVASC – Neurovascular Damage in Pediatric mTBI	ERA-NET Neuron	€1.100.000	2021–2024	PI
DIAGNOSE-CTE – Detect, Define, and Measure Progression of CTE (U01-093334)	NINDS/NIH	€16.000.000	2015–2022	Co-I
Intimate Partner Violence – Cognitive, Psychological, and Neuroimaging Signatures	NINDS/NIH R01	€363.891	2022–2025	Co-I
Development of MR Biomarkers of Brain Injury in Acute and Chronic mTBI	VA Healthcare System	€900.000	2014–2018	Co-I
Effects of Soccer on the Brain	Else Kröner-Fresenius Stiftung	€200.000	2012–2015	PI
Neuroimaging in Sports-Related Brain Trauma	DAAD	€20.000	2011–2012	PI
Diffusion Tensor Imaging as Biomarker for Motor Development	LMU Munich	€50.000	2009–2011	PI
Diffusion Tensor Imaging in Pediatric Neuroradiology	Society of Pediatric Neurology	€10.000	2009	PI
Repetitive Head Impact and Brain Development	LMU Junior Researcher Fund	€50.000	2017–2018	PI

SELECTED MEDIA COVERAGE

Research on the effects of head impacts in soccer players (JAMA, 2012) and concussion in ice hockey players (Journal of Neurosurgery, 2012) generated wide international media coverage. Subsequent work on cortical thinning, neuroinflammation, and sex differences in brain injury has continued to attract press and broadcast attention. My work has contributed to ongoing international public and policy discussions on youth sport safety and brain health. Selected media coverage:

Print & online

The New York Times	2012, 2013, 2017
TIME	2012
BBC News	2013, 2017–2023
CNN	2013, 2018, 2023
The Washington Post	2013, 2018
The Guardian	2017–2023
The Globe and Mail (Canada)	2012, 2018–2023
CBC / CTV News (Canada)	2012, 2018–2023
Der Spiegel	2013, 2018, 2023
Süddeutsche Zeitung	2013, 2016, 2019, 2023
Frankfurter Allgemeine Zeitung	2013, 2019
Die Zeit	2018, 2023
Neurology Today	2013
ScienceDaily	2012–2023

Television & radio

ARD (Germany)	multiple features since 2012
ZDF (Germany)	multiple features since 2012
BBC (UK)	television and radio, 2013–2023
CNN	international broadcast, 2013–2023
CBC (Canada)	television and radio, 2012–2023
Deutschlandfunk (Germany)	radio, 2012–2023

Research findings have been featured in additional television and radio broadcasts across Europe and North America.