

## 1. Personal Details

Hartikainen Kaisa M.

ORCID Researcher ID 0000-0001-7278-9635

## 2. Linguistic Skills

Mother tongue: Finnish

Other languages: English - Excellent

## 3. Education and Academic Degrees

*Neurologist*

University of Tampere, Finland, 5.7.2011

*Title of Docent (Associate Professor)*

Experimental Neurology, Tampere University, Finland, 10.3.2011

*Ph.D.*

University of Tampere, Finland, 22.8.1996

*Medical Doctor (M.D.)*

University of Tampere, School of Medicine, Finland, 20.6.1996

## 4. Merits in nominations for Full Professorships

*Competence as a full Professor of Physiology, University of Tampere, Finland 2013*

- 1<sup>st</sup> ranking candidate, expert reviewer from Karolinska Institute, Stockholm, Sweden

*Competence as a full Professor of Neurology, University of Tampere, Finland 2016*

- 1<sup>st</sup> ranking candidate, expert reviewer from Munich Center for Neuroscience - Brain and Mind, Germany
- 1<sup>st</sup> ranking candidate, expert reviewer from UCL, Institute of Neurology, United Kingdom

*Competence as a full Professor of Memory Disorders, University of Tampere, Finland 2018*

- 1<sup>st</sup> ranking candidate, expert reviewer from the University of Dublin, Ireland
- 1<sup>st</sup> ranking candidate, expert reviewer from the University of Oxford
- 2<sup>nd</sup> ranking candidate, expert reviewer from University of Gothenburg, Sweden

*Competence as a full Professor of Neurology, Oulu University, Finland 2022*

- 1<sup>st</sup> ranking candidate, expert reviewer from Uppsala University, Sweden
- 1<sup>st</sup> ranking candidate, expert reviewer from Imperial College, London, UK
- 1<sup>st</sup> ranking candidate, expert reviewer from CHU de Grenoble, France

## 5. Other Training, Qualifications and Skills

2001 ECFMG (Educational Commission for Foreign Medical Graduates) certified MD in USA  
15.10.2001

2001 Cognitive Neuroscience Summer Institute fellow, Dartmouth University, USA

1997 Designing Functional Resonance Techniques for Neuroscience, A.I. Virtanen Institute, Kuopio University

1995 NORFA Summer Course on Human Cortical Functions Fellowship, Helsinki

1991 NINC (Nordic Initiative for Neural Computing) Fellowship, Oslo, Copenhagen, Helsinki

1988-1996 Engineering student at Tampere Technical University, FI, electrical and biomedical engineering  
(78.5 study weeks)

## 6. Current Employment

2017- Head of Behavioral Neurology Research Unit, Pirkanmaa Hospital District, Tampere, Finland

2016- Neurologist, Mehiläinen, Tampere, Finland

## 7. Work Experience

### Research Experience

- 2011-2016 Academy Research Fellow (non-tenured Associate Professor), Founder and Head of Behavioral Neurology Research Unit, Tampere Univ. Hospital
- 2005-2008 Assistant Professor, Dept. of Physiology, University of Tampere, School of Medicine
- 2001-2003 Assoc. Specialist, Dept. of Psychology and Helen Wills Neuroscience Inst., University of California Berkeley, USA
- 1998- 2001 Postdoc. Fellow, Human Neurobiology Laboratory, Dept. of Psychology, University of California, Berkeley, USA
- 1997-1998 Postdoc. Fellow, Cognitive Neuroscience, Dept. of Neurology, University of California, Davis, USA
- 1992-1996 Research Fellow, Graduate School of Neuroscience Dept. of Clinical Neurophysiology, Tampere University Hospital and Signal Processing Laboratory, Tampere University of Technology

### Clinical Experience

- 2016- Neurologist, Private Practice, Mehiläinen
- 2018 Neurologist, Tampere University Hospital
- 2011-2018 Neurologist, Attendo, Validia Lahti, Rehabilitation Center, Kankaanpää, Kokkola Central Hospital, Kotka Central Hospital
- 2011-2016 Neurologist, Dept. of Neurology, Tampere University Hospital, Tampere, Finland
- 2001, 2009-11 Neurology Resident, Dept. of Neurology, Tampere University Hospital, Tampere, Finland
- 2006-2009 Neurology Resident, Dept. of Neurology, Tampere University Hospital, Tampere, Finland
- 2008-2009 Private Practice, Terveystalo, Tampere, Finland
- 2000-2001 Memory and Aging Center, Dept. of Neurology, University of California, San Francisco, USA
- 1997 Resident in Clinical Neurophysiology, Dept. of Clinical Neurophysiology, Tampere University Hospital
- 1996-1997 Primary Care General Practitioner Parkano Primary Care and Emergency Medical Center, Parkano, Finland

## 8. Highlighted Research Funding

### European Union Social Fund/ Finnish Social and Health Ministry

1.3.2020-30.8.2023 265 000€ (Principal Investigator K.M. Hartikainen)

Sustainable brain health, Behavioral Neurology Research Unit, Pirkanmaa Hospital District

### Academy of Finland

1.9.2017-30.08.2021 302 932€ (Principal Investigator K.M. Hartikainen)

Clinician Researcher Funding:

*Cognitive flexibility and emotion-attention interaction as indicators of brain health*, Behavioral Neurology Research Unit, Pirkanmaa Hospital District, Tampere, Finland

### Academy of Finland

1.9.2011-31.08.2016 973 975€ (Principal Investigator K.M. Hartikainen)

Academy Research Fellow Funding:

*Understanding, Assessing and Rehabilitating Cognitive, Affective and Behavioral Dysfunction Due to Neurological Disorders*, Pirkanmaa Hospital District, Tampere, Finland

Academy of Finland

1998-1999 136 800 FIM (Principal Investigator K.M. Hartikainen)

1998 *The Effect of Attention on Brain Rhythms* University of California, Davis, Department of Neurology, USA

1999 *Emotion Attention Interaction and Brains Oscillatory Activity*, University of California, Berkeley,  
Department of Psychology, Helen Wills Neuroscience Institute, USA

## 9. Research output

### Publications

1989-2021 Authorship in 47 scientific original publications with 19 first, 4 second and 15 last authorships. In addition 70 scientific abstracts and presentations in conferences.

Publications in the fields of neurology, neurophysiology, neuropsychology, cognitive and affective neuroscience. Topics include brain structure and mental function relationship (e.g. medio-dorsal nucleus of thalamus, anterior nucleus of thalamus, frontal lobes, orbitofrontal cortex, the right hemisphere), assessment and biomarkers of brain health, impact of neuromodulation on cognitive and affective brain functions, emotion-attention and emotion-cognition interaction, specifically executive functions. Studies include many different levels of neuroscientific investigation from sub-cellular to whole brain level and mental functions (from ion-channels to brain structures and networks to cognition and emotion) and many different methods (patch-clamp, electron microscopy, EEG, neuromodulation, methods of experimental psychology) as well as different study materials (cell-cultures) and groups from healthy subjects to many different clinical populations including Alzheimer's Disease, Frontotemporal dementia, head injury, treatment refractory epilepsy and depression, patients undergoing anesthesia and cardiac operations.

### Highlighted Publications

- Hartikainen Kaisa M. *Emotion-Attention Interaction in the Right Hemisphere*. Brain Sciences 2021. 11 (8), 1006 <https://doi.org/10.3390/brainsci11081006>
- Kuusinen Venla, Peräkylä Jari, Sun Lihua, Ogawa Keith H., Hartikainen Kaisa M. *Emotional Modulation of Frontal Alpha Asymmetry - a Novel Biomarker of Mild Traumatic Brain Injury*. Front. Hum. Neurosci., 20 July 2021 | <https://doi.org/10.3389/fnhum.2021.699947>
- Peräkylä J., Järventausta K., Haapaniemi P., Camprodon J, Hartikainen K. *Threat-modulation of executive functions -A novel biomarker of depression?* Front. Psychiatry 2021| [doi: 10.3389/fpsy.2021.670974](https://doi.org/10.3389/fpsy.2021.670974)
- Jari Peräkylä, Lihua Sun, Kai Lehtimäki, Jukka Peltola, Juha Öhman, Timo Möttönen, Keith H. Ogawa, and Kaisa M. Hartikainen. *Causal Evidence from Humans for the Role of Mediodorsal Nucleus of the Thalamus in Working Memory*. Dec 2017 Journal of Cognitive Neuroscience Dec;29(20) 2090-2102 [doi: 10.1162/jocn\\_a\\_01176](https://doi.org/10.1162/jocn_a_01176).
- Sun, Lihua; Peräkylä, Jari; Polvivaara Markus; Öhman Juha, Peltola, Jukka; Lehtimäki, Kai; Huhtala, Heini; Hartikainen, Kaisa. *Human anterior thalamic nuclei are involved in emotion-attention interaction*. Neuropsychologia, 2015 Oct 9;78:88-94. [doi: 10.1016/j.neuropsychologia.2015.10.001](https://doi.org/10.1016/j.neuropsychologia.2015.10.001).
- Hartikainen K M &. Knight R T: *Lateral and Orbital Prefrontal Cortex Contributions to Attention*. Book chapter in: Detection of Change: event-related potential and fMRI findings. Editor: Polich J. Publisher Kluwer Academic 2003; 99-116 [https://doi.org/10.1007/978-1-4615-0294-4\\_6](https://doi.org/10.1007/978-1-4615-0294-4_6)
- Rosen H J, Hartikainen K M, Jagust W, Kramer J, Cummings J, Boone K, Ellis W, Miller C, Miller B: Utility of clinical criteria in differentiating frontotemporal lobar degeneration from AD. Neurology 2002; 58 (11) 1608-16015 [doi: 10.1212/wnl.58.11.1608](https://doi.org/10.1212/wnl.58.11.1608).
- Hartikainen K M, Ogawa K H, Knight R T: *Transient interference of right hemispheric function due to automatic emotional processing*, Neuropsychologia 2000; 12:1576 – 15. [DOI: 10.1016/s0028-3932\(00\)00072-5](https://doi.org/10.1016/s0028-3932(00)00072-5)

## 10. Research supervision and leadership

Extensive multidisciplinary supervising experience of PhD and graduate students from the fields of medicine, psychology, neuroscience, cognitive science, architecture, and engineering nationally (*Tampere University and University of Helsinki, Finland*) and internationally (*University of Wien, Austria*). In addition, project-based supervision of Bachelor, Master's and PhD-students in *University of California, Berkely, USA*

### 2 PhD thesis, 5 ongoing

- 2017 PhD Noora Pihlajarinne-Lassila at School of Architecture, *The Role of Visual Complexity and Order in the Intuitive Preference for Apartment Interiors* Tampere University of Technology, Finland
- 2016 PhD Lihua Sun, *Impact of neuromodulation on cognitive and affective brain functions in humans*, Behavioral Neurology Research Unit, Tampere University Hospital, Tampere University, Finland

### 3 Master's Thesis, 2 ongoing

- 2020 M.Sc Otso Lensu: *Threatening music modulates the frontal alpha asymmetry evoked by a threatening visual distractor*, Department of Psychology, Tampere University, Tampere, Finland
- 2019 M.Sc. Laura Failla: *Impact of non-invasive vagus nerve stimulation on cognitive brain functions in healthy subjects- an ERP study*, Neuroscience master's program, University of Helsinki, Finland
- 2016 M.Sc. Elena Cesnaite, *The Role of Orbitofrontal Cortex in Emotional Modulation of Attention and Executive Functions: An ERP study on Patients with Unilateral and Bilateral Orbitofrontal Lesion*, University of Vienna, Austria

### 12 Medical Thesis, 3 ongoing

- 2020 M.D. Riikka Havela: *Effect of transcranial direct current stimulation of the prefrontal cortex on word fluency tasks in healthy adults*, Tampere University, Tampere, Finland
- 2019 M.D. Mikko Erkkilä: *Computer Based Testing of Executive Functions in Assessment of Brain Health*, Tampere University, Tampere, Finland
- 2018 M.D. Mia Pihlaja: *Impact of Arterial Fibrillation Ablation Therapy on Executive Functions*, Tampere University, Tampere, Finland
- 2018 M.D. Anselmi Kovalainen: *The Effect of Extraocular Light on Brain Activity*, Tampere University
- 2018 M.D. Aleksi Raudasoja: *Effects of Music on Emotion Attention Interaction*, Tampere University
- 2017 M.D. Pia Haapaniemi: *The effect of electroconvulsive treatment in executive and affective functions in treatment resistant depression*, Tampere University, Tampere, Finland
- 2016 M.D. Katri Holm: *The immediate Effects of Vagus Nerve Stimulation on executive and affective functions in patients with epilepsy*, Tampere University, Tampere, Finland
- 2016 M.D. Venla Kuusinen: *Emotion-attention and emotion-executive function interaction in mild head injury*, Tampere University, Tampere, Finland
- 2015 M.D. Tuomas Nykyri: *Effects of major cardiac surgery on executive functions*, Tampere University
- 2015 M.D. Markus Polvivaara: *Executive Function and Deep Brain Stimulation*, Tampere University
- 2009 M.D. Anna Siiskonen: *Emotion and Attention*, Tampere University
- 2008 M.D. Tuulia Isoviita: *Assessing Frontal Lobe Function after Head Injury* Tampere University

## 11. Merits in Teaching and Pedagogical Competence

### Lecturer/Instructor

- 2006-2013 Visiting Lecturer, Anatomy and Physiology, Tampere University of Technology, Finland
- 2006-2009 Asst. Professor, Physiology, University of Tampere, School of Medicine, Tampere, Finland  
Teaching evaluation from the students: Excellent
- 2004 Instructor, Basic Neurology for Medical Students, University of California, San Diego, USA  
Teaching evaluation from the students: Excellent
- 1991-1994 Instructor in Physiology, University of Tampere, School of Medicine, Tampere, Finland

### Planning and instructing courses

- 2017-2021 In charge of planning and instructing a two-day intensive course “*Mind and Brain - Behavioral Neurology for Healthcare Professionals*” (Professio)  
Course held biannually (10 times) in Helsinki, Espoo, Tampere, Turku, Oulu, Kuopio as well as remotely
- 2019-2020 In charge of planning and instructing several two-day intensive courses including topics such as “*Head trauma rehabilitation*”,  
“*Parkinson’s disease and atypical Parkinsonisms*” and “*Neurodegenerative disorders*” (Coronaria) held in Helsinki, Espoo, Oulu, Kuopio
- 2018-2020 Neurology courses for health care professionals planned and instructed by invitation from Helsinki University Hospital and Oulu University Hospital

### Creating New Learning and Research Environments

- 2012-present Established and lead Behavioral Neurology Research Unit in Finland in Tampere University Hospital (<http://www.uta.fi/med/en/research/behavioralneurology/index.html>)

### Teaching awards

- 2006 Instructor of the Year, Medical Students Association (TLK), University of Tampere, School of Medicine, Finland

## **12. Awards Prizes and Honours**

- 2006 Instructor of the Year, Medical Students Association (TLK), University of Tampere, School of Medicine, Finland
- 2000, 2001 Health Emotions Research Institute Award, Wisconsin USA
- 1995 1<sup>st</sup> Prize for research oral presentation - South West Thames Anaesthesia Update, France
- 1994 1<sup>st</sup> Prize for research poster presentation - Medical Doctor’s National Meeting, Tampere, Finland

## **13. Other Academic Merits**

### Monitor/Expert position

- 2017-2020 EU Horizon 2020 funded project monitor/expert

### Grant Reviewer

- 2019 Research grant reviewer, Israel Science Foundation
- 2016 Research grant reviewer, International Neuroinformatics Coordinating Facility (INCF)
- 2015 Research grant evaluator, Freiburg Institute for Advanced Study (FRIAS) Univ. of Freiburg and Univ. Strasbourg

### PhD Opponent

- 2017 Elina Hakkarainen: *Cognitive and motor processing in mild spastic cerebral palsy: An event-related potential study.*  
University of Groningen, Groningen Netherlands

### PhD Reviewer

- 2017 Heidi Jurvelin: *Transcranial bright light – the effect on human psychophysiology*
- 2016 Elina Hakkarainen: *Cognitive and motor processing in mild spastic cerebral palsy: An event-related potential study.*  
University of Groningen, Groningen, Netherlands

Date of CV: 10.2.2022

- 2015 Eila Sonkajärvi: Brain's *Electrical Activity in Deep Anaesthesia – With special reference to EEG burst-suppression*  
University of Oulu, Medical School, Oulu, Finland

Conference Reviewer/Member of Scientific Committee

- 2012 International Neuropsychological Society (INS) meeting 2012/11th Nordic Meeting in Neuropsychology, Oslo, Norway  
2013 Neuro13, Common Challenges of Neurology, Psychiatry and Psychology, The Finnish Fair Corporation, Helsinki, Finland

Highlighted International Invited Lectures

- 2018 MIT, McGovern Institute for Brain Research, Boston, USA “*Deep Brain Stimulation as a Novel Window into Human Brain Structure-Function Relationship: Thalamic Nuclei in affective and Cognitive Functions*”  
2018 Cognitive Behavioral Neurology Unit, Massachusetts General Hospital, Boston, USA “*How DBS can be used to study human brain-Structure Function relationship*”  
2018 Division of Neuropsychiatry, Massachusetts General Hospital, Boston, USA “*Impact of Neuromodulation (DBS, VNS and ECT) on cognitive and affective brain networks/functions*”  
2018 First Annual Oslo-Berkeley meeting on Neural Oscillations and Human Behavior Rome, Italy. *Task-related frontal alpha asymmetry as a potential biomarker for the impact of neuromodulation on affective brain circuits.*

Positions of Trust

- 2007-2009 Member of the Academic Council, University of Tampere, School of Medicine