

## Sofia Rita Cardoso Fernandes

Sofia Fernandes is a doctorate researcher at the Instituto de Biofísica e Engenharia Biomédica (IBEB) of Faculdade de Ciências, Universidade de Lisboa (FCUL), Portugal. She has a PhD in Neurosciences. Her research is dedicated to study the effects of electromagnetic stimulation in biological tissues for therapeutic applications, using realistic computational models of the human brain and spinal cord, field of research that she leads at IBEB since September 2022. Her academic background combines clinical and exact sciences, with BScs. in Physiotherapy and Physics, and MSc. in Astrophysics, reflecting a multidisciplinary research methodology. Sofia published 9 articles in international peer-reviewed journals (5 in Q1 of respective fields), 2 book chapters and 25 conference proceedings. Currently, she is an invited professor in the MSc. programs in Biophysics and Biomedical Engineering (FCUL) and in Physiotherapy (Escola Superior da Tecnologia da Saúde de Lisboa, ESTeSL), where she lectures Bioelectricity and Electrophysiology and Human Movement and Motor Control, respectively. She is also supervisor of 2 PhD and 9 MSc students (3 completed, 2 as consultant). She was in the organizing committees of PSMR 2017 and BHBM 2022 international conferences, invited speaker in 1 international conference on neurophysiology in 2019, and organizer of 3 symposiums in 3 international conferences on modelling and experimental strategies in non-invasive spinal stimulation (1 in 2020 and 2 in 2022). She is guest editor of the special issues "Electromagnetic Modeling for Brain Stimulation" (PMB, IOP Science) and "Emerging Talents in Human Neuroscience: Neuromodulation 2023" (Frontiers in Human Neuroscience). Sofia is currently the portuguese PI in the international consortium "DC4MND- Multidimensional mechanistic investigations of trans-spinal direct current stimulation in motor neuron disease", awarded by the JPND 2022 call. She also has ongoing collaborations with the University of Texas Southwestern and the University of Seville. Her previous experience includes a doctorate researcher position in the FCT R&D project Stimuli2BioScaffold - PTDC/EME-SIS/32554/2017 at CDRSP - Centre for Rapid and Sustainable Product Development, from the Instituto Politécnico de Leiria, Portugal, during 2020, in modelling strategies to optimize electromagnetic applications in Tissue Engineering, with whom she still collaborates. Sofia had also previous researcher positions in FCT projects DA1/2019/13 (statistical analysis of ALS biomarkers, Nova Medical School, 2019) and PESO/P/PRO/40154/2000 (analysis of near-IR images of circumstellar disks, FCUL, 2001-03). She also won a 4-year FCT PhD scholarship in 2014 (SFRH/BD/100254/2014).

### Identification

#### Personal identification

Full name

Sofia Rita Cardoso Fernandes

#### Citation names

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## Websites

<https://www.researchgate.net/profile/Sofia-Rita-Fernandes> (Feed)

## Knowledge fields

Engineering and Technology - Medical Engineering - Medical Engineering  
Medical and Health Sciences - Basic Medicine - Neurosciences  
Medical and Health Sciences - Health Sciences - Sport and Fitness Sciences  
Medical and Health Sciences - Medical Biotechnology - Technologies Involving the Manipulation of Cells, Tissues, Organs or the Whole Organism

## Languages

Language	Speaking	Reading	Writing	Listening	Peer-review
Portuguese (Mother tongue)					
English	Advanced (C1)	Advanced (C1)	Advanced (C1)	Advanced (C1)	Advanced (C1)
French	Elementary (A2)	Intermediate (B1)	Elementary (A2)	Intermediate (B1)	Elementary (A2)

## Education

	Degree	Classification
2013/09 - 2019/10/07 Concluded	Neurociências (Doutoramento) Major in Ramo/Especialidade: Ciências Biomédicas, especialidade de Neurociências  Universidade de Lisboa Faculdade de Medicina, Portugal <i>"Transcutaneous Spinal Direct Current Stimulation: Modelling the spinal electric field distribution and clinical relevance" (THESIS/DISSERTATION)</i>	18 - with Honors and Distinction
2005/09/19 - 2009/07/20 Concluded	Fisioterapia (Licenciatura) Major in Fisioterapia  Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal	16 points (in 20)

2001/09/23 - 2003/10/31 Concluded	Astronomia e Astrofísica (Mestrado) Major in Astronomy and Astrophysics  Universidade de Lisboa Faculdade de Ciências, Portugal <i>"Frequência de Discos Circum-Estelares no enxame Aberto NGC 2547: Estudo do Excesso de Emissão no Infravermelho Próximo" (THESIS/DISSERTATION)</i>	Very Good
1994/09/19 - 2001/12/12 Concluded	Física (Licenciatura) Major in Physics  Universidade de Lisboa Faculdade de Ciências, Portugal	14 points (in 20)

## Affiliation

### Science

	Category Host institution/organization	Employer
2021/01/01 - Current	Postdoc (Research) Universidade de Lisboa Faculdade de Ciências, Portugal	Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica, Portugal
2020/01/06 - 2020/12/31	Postdoc (Research) Instituto Politécnico de Leiria Centro para o Desenvolvimento Rápido e Sustentado de Produto, Portugal	Instituto Politécnico de Leiria Centro para o Desenvolvimento Rápido e Sustentado de Produto, Portugal
2019/05/01 - 2019/10/31	Researcher (Research) Universidade Nova de Lisboa Centro de Estudos de Doenças Crónicas, Portugal	Universidade Nova de Lisboa Centro de Estudos de Doenças Crónicas, Portugal
2015/03/01 - 2019/02/28	Researcher (Research) Universidade de Lisboa Faculdade de Medicina, Portugal	Fundação para a Ciência e a Tecnologia, Portugal
2001/10/01 - 2003/10/01	Researcher (Research) Universidade de Lisboa Faculdade de Ciências, Portugal	Universidade de Lisboa Faculdade de Ciências, Portugal

## Projects

## Grant

	Designation	Funders
2023/06/01 - Current	DC4MND- Multidimensional mechanistic investigations of trans spinal direct current stimulation in motor neuron disease jnnpd2022-010  Co-Principal Investigator (Co-PI) Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica, Portugal	Fundação para a Ciência e a Tecnologia, Portugal EU Joint Programme Neurodegenerative Disease Research, Germany Ongoing
2019/05/01 - 2019/10/31	Avaliação Detalhada de MicroRNA circulantes como biomarcadores de diagnóstico e prognóstico em Esclerose Lateral Amiotrófica PTDC/MEC-NEU/31195/2017  Research Fellow Universidade Nova de Lisboa Centro de Estudos de Doenças Crónicas, Portugal	Fundação para a Ciência e a Tecnologia, Portugal
2015/03/01 - 2019/02/28	Transcutaneous Spinal Direct Current Stimulation: Modelling the spinal electric field distribution and clinical relevance. SFRH/BD/100254/2014  PhD Student Fellow Universidade de Lisboa Faculdade de Medicina, Portugal	Fundação para a Ciência e a Tecnologia, Portugal  Concluded
2001/10/01 - 2003/10/01	The Nearest Planet Nurseries: Protoplanetary Disk Fraction in Young Clusters, and the Timescale for Planet Formation <a href="https://info.eu-repo/grantAgreement/FCT/PDCT/40154/PT">info:eu-repo/grantAgreement/FCT/PDCT/40154/PT</a>  Master Student Fellow Universidade de Lisboa Faculdade de Ciências, Portugal	Fundação para a Ciência e a Tecnologia, Portugal  Concluded

## Contract

	Designation	Funders
2021/01/01 - Current	Programatic Funding of IBEB UIDP/00645/2020  Post-doc Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica, Portugal	Fundação para a Ciência e a Tecnologia, Portugal  Ongoing
2020/01/06 - 2020/12/31	Stimuli2BioScaffolds - Stimuli modelling for BioScaffolds: from numerical modelling to in vitro tests C492074784-00085914  Post-doc Instituto Politécnico de Leiria Centro para o Desenvolvimento Rápido e Sustentado de Produto,	Fundação para a Ciência e a Tecnologia, Portugal  Ongoing

## Outputs

### Publications

- |                     |   |  |
|---------------------|---|--|
| Book chapter        | 1 | <p>Fernandes SR; Pereira M; Elbasiouny SM; Dhaher Y; de Carvalho M; Miranda PC. Corresponding author: Fernandes SR. "Interplay between Electrical Conductivity of Tissues and Position of Electrodes in Transcutaneous Spinal Direct Current Stimulation (tsDCS)". In <i>Brain &amp; Human Body Modelling Book Series 2021</i>. Springer Nature, 2021.</p> <p>In press</p>                 |
|                     | 2 | <p>Fernandes SR; Salvador R; de Carvalho M; Miranda PC. "Modelling Studies of Non-invasive Electric and Magnetic Stimulation of the Spinal Cord (9 citations)". In <i>Brain and Human Body Modeling 2020</i>, 139-165. Springer International Publishing, 2020.</p> <p>Published · 10.1007/978-3-030-45623-8_8</p>   |
|                     | 3 | <p>Fernandes SR; Pereira M; de Carvalho M; Miranda PC. "Non-invasive Spinal Cord Stimulation: Relevance of Modelling Studies in Clinical Protocol Design". In <i>XV Mediterranean Conference on Medical and Biological Engineering and Computing – MEDICON 2019</i>, 1767-1773. Switzerland: Springer International Publishing, 2019.</p> <p>Published · 10.1007/978-3-030-31635-8_214</p> |
| <hr/>               |   |  |
| Conference abstract | 1 | <p>Fernandes SR; Wenger C; Salvador R; de Carvalho M; Miranda PC. "Transcutaneous Spinal Direct Current Stimulation: Modelling the Electric Field Distribution in the Cervical Spinal Cord.". Paper presented in <i>3rd International Congress on Neurotechnology, Electronics and Informatics – Neurotechnix 2015, LISBOA</i>, 2015.</p> <p>Published</p>                                 |
|                     | 2 | <p>Fernandes SR; Wenger C; Salvador R; de Carvalho M; Miranda PC. "Transcutaneous Spinal Cord Stimulation: Modeling the Electric Field Distribution using the Finite Element Method.". Paper presented in <i>Proceedings of the 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society 2015, Milan</i>, 2015.</p> <p>Published</p>                   |
| <hr/>               |   |  |
| Conference paper    | 1 | <p>Videira AS; Canadas D; De O. Pires L; Andrade A; Ferreira HA; Miranda PC; Fernandes SR. "How the Number and Distance of Electrodes Change the Induced Electric Field in the Cortex during Multichannel tDCS (1 citation)". 2022.</p> <p>10.1109/embc48229.2022.9871114</p>  |
|                     | 2 | <p>Meneses J; Fernandes SR; Alves N; Pascoal-Faria P; Miranda PC. "Effects of Scaffold Electrical Properties on Electric Field Delivery in Bioreactors (1 citation)". 2021.</p> <p>10.1109/embc46164.2021.9630711</p>  |
|                     | 3 | <p>Fernandes SR; Meneses J; Datta A; Amado S; Alves N; Pascoal-Faria P. "Comparison of electromagnetic stimulation fields generated by different experimental setups: A biophysical analysis". 2020.</p>   |

10.1063/5.0081338

- 4 Meneses J; Fernandes SR; Datta A; Amado S; Alves N; Pascoal-Faria P. "Numerical modelling of a bioreator design targeting optimal conditions for cell culture". 2020.  
10.1063/5.0081336
- 5 Fernandes SR; Salvador R; de Carvalho M; Miranda PC. "Electric Field Distribution during Non-Invasive Electric and Magnetic Stimulation of the Cervical Spinal Cord (3 citations)". 2019.  
10.1109/EMBC.2019.8857129
- 6 Fernandes SR; Teixeira PS; Correia J; Alves J; Santos FD; Lada EA. "What Can We Learn from Protoplanetary Disk Frequency in Young Clusters?". Paper presented in *Extrasolar Planets: Today and Tomorrow, held 30 June - 4 July 2003, Institut D'Astrophysique de Paris, France., Paris, 2003*.  
Published
- 7 Teixeira PS; Fernandes SR; Alves JF; Correia J; Santos FD; Lada EA. "Timescale for Disk Dissipation in Young Clusters". Paper presented in *Extrasolar Planets: Today and Tomorrow, ASP Conference Proceedings, Vol. 321, held 30 June - 4 July 2003, Institut D'Astrophysique de Paris, France., Paris, 2003*.
- 8 Teixeira PS; Fernandes SR; Alves JF; Correia J; Lada C; Lada EA; Santos FD. "What can we Learn from Disk Frequency in Young Clusters?". Paper presented in *Star Formation at High Angular Resolution, International Astronomical Union. Symposium no. 221, held 22-25 July, 2003 in Sydney, Australia, Sydney, 2003*.
- 9 Fernandes SR; Teixeira PS; Alves JF; Correia J; Santos FD; Lada C. "Protoplanetary Disk Fraction in Young Clusters and the Timescale for Planet Formation". Paper presented in *2002 International Astronomical Observatories in Chile workshop, held 11-15 March 2002 at La Serena, Chile., La Serena, 2002*.

## Journal article

- 1 Marques da Silva V; Ferreira HA; Fernandes SR. "Effect of tDCS montages in EEG-based functional connectivity of the sensorimotor network". *Brain Stimulation* 16 1 (2023): 372. <http://dx.doi.org/10.1016/j.brs.2023.01.732>.  
Published · 10.1016/j.brs.2023.01.732
- 2 Fernandes SR; Pereira M; Andrade A; Ferreira HA; de Carvalho M. "Model-guided transcutaneous direct current stimulation of the brain and spinal cord to repair ALS-induced motor dysfunctions". *Brain Stimulation* 16 1 (2023): 187-188. <http://dx.doi.org/10.1016/j.brs.2023.01.218>.  
10.1016/j.brs.2023.01.218
- 3 Pereira M; Fernandes SR; Miranda PC; de Carvalho M. "Lumbar trans-spinal direct current stimulation: A modeling-experimental approach to dorsal root ganglia stimulation (1 citation)". *Frontiers in Neuroscience* 16 (2022): <http://dx.doi.org/10.3389/fnins.2022.1041932>.  
Published · Open access · 10.3389/fnins.2022.1041932
- 4 Pereira M; Fernandes SR; De Carvalho M; Miranda PC. "TH-183. Relevance of realistic human models to guide non-invasive spinal stimulation: A review of current findings". *Clinical Neurophysiology* 141 (2022): S139. <http://dx.doi.org/10.1016/j.clinph.2022.07.363>.

10.1016/j.clinph.2022.07.363

- 5 Meneses J; Fernandes SR; Alves N; Pascoal-Faria P; Miranda PC. "How to correctly estimate the electric field in capacitively coupled systems for tissue engineering: a comparative study (3 citations)". *Scientific Reports* 12 1 (2022): <http://dx.doi.org/10.1038/s41598-022-14834-2>.  
Published · Open access · 10.1038/s41598-022-14834-2
- 6 de Carvalho M; Fernandes SR; Pereira M; Gromicho M; Santos MO; Alves I; Pinto S; Swash M. "Respiratory function tests in amyotrophic lateral sclerosis: The role of maximal voluntary ventilation (2 citations)". *Journal of the Neurological Sciences* 434 (2022): 120143. <http://dx.doi.org/10.1016/j.jns.2022.120143>.  
Published · Open access · 10.1016/j.jns.2022.120143
- 7 Pereira M; Fernandes SR; Miranda PC; de Carvalho M. "Neuromodulation of lower limb motor pathways with trans-spinal direct current stimulation: an overview of current findings". *Annals of Medicine* 53 sup1 (2021): S24-S25. <http://dx.doi.org/10.1080/07853890.2021.1896902>.  
10.1080/07853890.2021.1896902
- 8 Meneses J; Silva JC; Fernandes SR; Datta A; Castelo Ferreira F; Moura C; Amado S; Alves N; Pascoal-Faria P. "A Multimodal Stimulation Cell Culture Bioreactor for Tissue Engineering: A Numerical Modelling Approach (8 citations)". *Polymers* 12 4 (2020): 940. <http://dx.doi.org/10.3390/polym12040940>.  
Published · Open access · 10.3390/polym12040940
- 9 Fernandes SR; Pereira M; Salvador R; Miranda PC; de Carvalho M. "Cervical trans-spinal direct current stimulation: a modelling-experimental approach. (11 citations)". *Journal of NeuroEngineering and Rehabilitation* 16 1 (2019): 123. <https://doi.org/10.1186/s12984-019-0589-6>.  
Published · Open access · 10.1186/s12984-019-0589-6
- 10 Fernandes SR; Salvador R; de Carvalho MA; Miranda PC. "Electric Field Distribution during Non-Invasive Electric and Magnetic Stimulation of the Cervical Spinal Cord (3 citations)". *Conf Proc IEEE Eng Med Biol Soc. 2019* (2019): 5898-5901.  
Published
- 11 Pereira M; Fernandes SR; Miranda PC; de Carvalho M. "Neuromodulation of lower limb motor responses with transcutaneous lumbar spinal cord direct current stimulation. (8 citations)". *Clinical neurophysiology : official journal of the International Federation of Clinical Neurophysiology* 129 9 (2018): 1999-2009. <http://europepmc.org/abstract/med/30041145>.  
Published · 10.1016/j.clinph.2018.07.002
- 12 Fernandes SR; Salvador R; Wenger C; de Carvalho M; Miranda PC. "Transcutaneous spinal direct current stimulation of the lumbar and sacral spinal cord: a modelling study (23 citations)". *Journal of Neural Engineering* 15 3 (2018): 036008. <https://doi.org/10.1088/1741-2552/aaac38>.  
Published · 10.1088/1741-2552/aaac38
- 13 de Carvalho M; Pereira M; Fernandes SR; Miranda PC. "O203 Neuromodulation of lower limb motor circuitry with transcutaneous lumbar spinal cord direct current stimulation". *Clinical Neurophysiology* 128 9 (2017): e243. <http://dx.doi.org/10.1016/j.clinph.2017.07.211>.  
10.1016/j.clinph.2017.07.211

- 14 Santos L; Martinho M; Salvador R; Wenger C; Fernandes SR; Ripolles O; Ruffini G; Miranda PC. "Effects of tissue conductivities in tCS of the motor cortex with different electrode configurations". *Brain Stimulation* 10 2 (2017): 438. <http://dx.doi.org/10.1016/j.brs.2017.01.306>.  
10.1016/j.brs.2017.01.306
- 15 Fernandes SR; Salvador R; Wenger C; de Carvalho M; Miranda PC. "Influence of electrode configuration in neuromodulation of cervical spinal cord during non-invasive direct current stimulation". *Brain Stimulation* 10 2 (2017): 458. <http://dx.doi.org/10.1016/j.brs.2017.01.345>.  
10.1016/j.brs.2017.01.345
- 16 Fernandes SR; Salvador R; Wenger C; de Carvalho M; Miranda PC. "P084 Electric field distribution in the lumbar spinal cord during trans-spinal magnetic stimulation (2 citations)". *Clinical Neurophysiology* 128 3 (2017): e48-e50. <http://dx.doi.org/10.1016/j.clinph.2016.10.209>.  
10.1016/j.clinph.2016.10.209
- 17 Miranda PC; Salvador R; Wenger C; Fernandes SR. "Optimizing Electric-Field Delivery for tDCS: Virtual Humans Help to Design Efficient, Noninvasive Brain and Spinal Cord Electrical Stimulation. (6 citations)". *IEEE pulse* 8 4 (2017): 42-45. <http://europepmc.org/abstract/med/28715314>.  
Published · 10.1109/mpul.2017.2701259
- 18 Miranda PC; Salvador R; Wenger C; Fernandes SR. "Computational models of non-invasive brain and spinal cord stimulation. (16 citations)". *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference* (2016): <http://europepmc.org/abstract/med/28269725>.  
Published · 10.1109/embc.2016.7592207
- 19 Fernandes SR; Salvador R; Wenger C; de Carvalho MA; Miranda PC. "Influence of electrode configuration on the electric field distribution during transcutaneous spinal direct current stimulation of the cervical spine. (7 citations)". *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference* (2016): 3121-3124. <http://europepmc.org/abstract/med/28324978>.  
Published · 10.1109/embc.2016.7591390
- 20 Santos L; Martinho M; Salvador R; Wenger C; Fernandes SR; Ripolles O; Ruffini G; Miranda PC. "Evaluation of the electric field in the brain during transcranial direct current stimulation: A sensitivity analysis. (25 citations)". *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference* (2016): 1778-1781. <http://europepmc.org/abstract/med/28268672>.  
10.1109/embc.2016.7591062
- 21 Macedo M; Wenger C; Salvador R; Fernandes SR; Miranda PC. "Investigating an alternative ring design of transducer arrays for tumor treating fields (TTFs). (3 citations)". *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference* (2016): 5168-5171. <http://europepmc.org/abstract/med/28269429>.  
Published · 10.1109/embc.2016.7591891
- 22 Bastos R; Fernandes SR; Salvador R; Wenger C; de Carvalho MA; Miranda PC. "The effect of inter-electrode distance on the electric field distribution during transcutaneous lumbar spinal cord direct current stimulation. (8 citations)". *Conference proceedings : ... Annual International Conference of the IEEE*



*Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference* (2016): 1754-1757. <http://europepmc.org/abstract/med/28268666>.

Published · 10.1109/embc.2016.7591056

- 23 Teixeira PS; Fernandes SR; Alves JF; Correia J; Santos FD; Lada EA; Lada C. "Near infrared imaging of NGC 2316 (16 citations)". *Astronomy & Astrophysics* 413 1 (2003): L1-L4. <http://dx.doi.org/10.1051/0004-6361:20034621>.  
Published · 10.1051/0004-6361:20034621

Thesis /  
Dissertation

- 1 Fernandes, Sofia Rita. "Transcutaneous Spinal Direct Current Stimulation : Modelling the spinal electric field distribution and clinical relevance". PhD, 2019. <http://hdl.handle.net/10451/55166>.
- 2 "Frequência de Discos Circum-Estelares no Enxame Aberto NGC2547: Estudo do Excesso de Emissão no Infravermelho Próximo". Master, Universidade de Lisboa Faculdade de Ciências, 2003.

## Activities

### Oral presentation

	Presentation title	Event name Host (Event location)
2022/09/08	"Non-invasive Brain and Spinal Stimulation (NIBSS) Strategies for Diagnosis and Treatment of Amyotrophic Lateral Sclerosis (ALS)"	32nd International Congress of Clinical Neurophysiology, ICCN 2022, Geneva, Switzerland International Federation of Clinical Neurophysiology (Geneva, Switzerland)
2022/08/18	"Comparing tDCS paradigms for modulation of motor-related connectivity: investigating the relation between the electric field and clinical outcomes"	Brain and Human Body Modeling Conference 2022 (hybrid conference) A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown MA, USA. (Massachusetts, United States)
2021/09/02	Realistic Human Modelling for Biomedical Applications	Session 1: "Digital Twins for Life Sciences. International Manufacturing Forum Series (online) CDRSP – Center for Rapid and Sustainable Product Development, Instituto Politécnico de Leiria, Marinha Grande, Portugal (Marinha Grande, Portugal)
2021/08/19	Accurate realistic model of the spinal cord and surrounding tissues.	Brain & Human Body Modelling (BHBM) Conference (online), August 19-20, 2021 A.A. Martinos Center for Biomedical

Imaging, Massachusetts General Hospital, Charlestown MA, USA. (Massachusetts)

2021/08/19	Interplay between Electrical Conductivity of Tissues and Position of Electrodes in Transcutaneous Spinal Direct Current Stimulation	Brain & Human Body Modelling (BHBM) Conference (online), August 19-20, 2021 A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown MA, USA. (Massachusetts)
2021/05/05	Estimulação Eletromagnética do Sistema Nervoso: a teoria ao serviço da clínica (online, PT).	Dia aberto da FCUL 2021 Faculdade de Ciências da Universidade de Lisboa, FCUL (Lisboa, Portugal)
2020/09/23	Comparison of Electromagnetic Stimulation Fields Generated By Different Experimental Setups: - a Biophysical Analysis -	ICNAAM 2020 - 18th International Conference of Numerical Analysis and Applied Mathematics University of Athens, Greece; European Society of Computational Methods in Sciences and Engineering (ESCMCE) (Rhodes, Greece)
2020/09/11	A combined modelling-experimental approach in Non-Invasive Spinal Cord Stimulation	7th International Conference on Non-Invasive Brain Stimulation (NIBS) Deutsche Gesellschaft für Klinische Neurophysiologie und Funktionelle Bildgebung (Baden-Baden, Germany)
2019/11/14	Non-Invasive Neuromodulation of the Cervical Spinal Cord: combining modelling and experimental studies	4th PhD Students Meeting of the Mind-Brain College of the Universidade de Lisboa Universidade de Lisboa Faculdade de Medicina (Lisboa, Portugal)
2019/09	Optimizing Electromagnetic Stimulation of the Brain and Spinal Cord: a combined modelling and experimental approach	11th OSET Congress of the International Organization of Societies for Electrophysiological Technology International Organization of Societies for Electrophysiological Technology (Porto, Portugal)
2019/08	Non-invasive Spinal Cord Stimulation: Relevance of Modelling Studies in Clinical Protocol Design	Medicon 2019 - XV Mediterranean Conference on Medical and Biological Engineering and Computing Universidade de Coimbra (Lisboa, Portugal)
2018/07	Otimização do Campo Elétrico em Estimulação Não-Invasiva do Cérebro e da Medula Espinhal	Ciência '18 - Encontro com a Ciência e Tecnologia em Portugal Ministério da Ciência e Ensino Superior (Lisboa, Portugal)

2016	Influence of electrode configuration on the electric field distribution during transcutaneous spinal direct current stimulation of the cervical spine	IEEE Eng , Med Biol Soc. 2016 IEEE (Orlando FL, United States)
2015	Transcutaneous Spinal Direct Current Stimulation: Modelling the Electric Field Distribution in the Cervical Spinal Cord.	International Congress on Neurotechnology, Electronics and Informatics – Neurotechnix 2015 (Lisboa)

## Supervision

	Thesis Title Role	Degree Subject (Type) Institution / Organization
2023/03/01 - Current	MSc thesis: "Motor Dynamics of the Human Cortex: implementation and validation of a HNN-based neural circuit model to predict movement-related cortical potentials" Supervisor	Physics Engineering (Master) Politecnico di Milano, Italy
2023/02/01 - Current	MSc thesis: "Combined Brain and Spinal Stimulation for modulation of motor-related EEG responses" Supervisor	Ciências da Engenharia - Engenharia Biomédica e Biofísica (Master) Universidade de Lisboa Faculdade de Ciências, Portugal
2022/09/01 - Current	PhD Thesis "Numerical Modelling of Mechanical and Electromagnetic Stimulation in Bioreactors and Scaffolds for Tissue Engineering" Supervisor	Ciências da Engenharia - Engenharia Biomédica e Biofísica (PhD) Universidade de Lisboa Faculdade de Ciências, Portugal
2022/07/18 - Current	PhD Thesis: "Spasticity in Amyotrophic Lateral Sclerosis: predicting and evaluating treatment impact with non-invasive electrical stimulation" Co-supervisor	Neurociências (PhD) Universidade de Lisboa Faculdade de Medicina, Portugal
2022 - Current	MSc thesis: "Treino proprioceptivo como estratégia de intervenção para melhoria do equilíbrio em indivíduos pós Acidente Vascular Cerebral (AVC): Revisão sistemática" Co-supervisor	Fisioterapia (Master) Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal
2021/12 - Current	MSc thesis: "Modelling Transitions Between Brain States: from rest to motor execution" Co-supervisor of Lima, David	Physics Engineering (Master) Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica, Portugal
2021/09 - Current	MSc thesis: "Targeted tDCS in Sensorimotor Networks: Modelling the Electric Field Distribution based on FC	Biomedical Engineering (Master) Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica,

## Analysis"

Co-supervisor of Silva, Vasco

Portugal

2021/09 - 2022/07

MSc thesis: "Importância terapêutica do exercício na neuroplasticidade em adultos com patologia neurológica: revisão sistemática"

Co-supervisor of Cardoso, Sara

Fisioterapia (Master)

Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal

2020/04/30 -  
2020/11/19

MSc thesis: "Efeitos do Uso de Auxiliares de Marcha em Pessoas com Sequelas de Acidente Vascular Cerebral - Fase Crónica: Revisão Sistemática."

Co-supervisor

Fisioterapia (Master)

Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal

## Event organisation

Event name

Type of event (Role)

Institution / Organization

2023/07/24 -  
2023/07/27

Organization of Symposium entitled "Computational analysis of non-invasive neuromodulation constructs: Brain and Spine", to be held in the 45th Annual International Conference of IEEE Engineering in Medicine and Biology (EMBC) 2023, Sydney, Australia (2023/07 - 2023/07)

Symposium (Other)

IEEE, United States

2023/03/20 -  
2023/03/20

Organization of symposium: "Non-invasive Brain and Spinal Stimulation (NIBSS) in the Diagnosis and Treatment of Amyotrophic Lateral Sclerosis (ALS): an update" in the 5th International Brain Stimulation Conference 2023, held in Lisbon, Portugal (2023/03/20 - 2023/03/22)

Symposium (Other)

Elsevier Inc, United States

2022/09/08 -  
2022/09/08

Organization of symposium: "Non-invasive Brain and Spinal Stimulation (NIBSS) Strategies for Diagnosis and Treatment of Amyotrophic Lateral Sclerosis (ALS)", in the 32nd International Congress of Clinical Neurophysiology, Geneva, Switzerland (2022/09/04 - 2022/09/08)

Symposium (Other)

International Federation of Clinical Neurophysiology, United States

2022/08/18 -  
2022/08/19

Chair in Session II: "Featured Talks: EEG/TES/DBS" in Brain & Human Body Modeling (BHBM) Conference (hybrid format), A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown MA

A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, United States

(2022/08/18 - 2022/08/19)

Conference (Other)

2021/08/19 - 2021/08/19	Co-chair in Session II. Modeling Neuroimaging and Electrical Stimulation (Very Low Frequency Band), and Interplay Between Them (Co-Chair) in in Brain & Human Body Modelling (BHBM) Conference (online), August 19-20, 2021, A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown MA, USA. (2021/08/19 - 2021/08/20)	A.A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, United States
	Conference (Other)	
2020/09/10 - 2020/09/14	Organization of Symposia: Computer Modelling in Non-Invasive Spinal Cord Stimulation, held at the 7th International Conference on Non-Invasive Brain Stimulation (NIBS), 24-26 March 2020 · Baden-Baden/Germany (2020/09/11 - 2020/09/11)	Deutsche Gesellschaft für Klinische Neurophysiologie und funktionelle Bildgebung, Germany
	Symposium (Other)	
2018/11/14 - 2018/11/15	4th PhD Students Meeting of the Mind-Brain College of the Universidade de Lisboa, Lisboa Member of the organizing committee (2018/11/14 - 2018/11/15)	Universidade de Lisboa Faculdade de Medicina, Portugal
	Conference (Member of the Organising Committee)	
2017/10/19 - 2017/10/20	3rd PhD Students Meeting of the Mind Brain College of the University of Lisbon Member of the organizing committee Poster presentation entitled "Non-Invasive Direct Current Stimulation of the Lumbar Spinal Cord: combining observational studies with computational models" (2017/10/19 - 2017/10/20)	Universidade de Lisboa Faculdade de Medicina, Portugal
	Conference (Member of the Organising Committee)	
2017/05/29 - 2017/05/31	6th International Conference on PET-MRI and SPECT-MRI (2017/05/29 - 2017/05/31)	Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica, Portugal
	Conference (Member of the Organising Committee)	
2017/05/27 - 2017/05/27	PSMR 2017 Sattelite School (PET-MRI School) - Presentations and Hands-on on MRI and PET data analysis (2017/05/27 - 2017/05/27)	Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica, Portugal
	Workshop (Member of the Organising Committee)	

2016/11/28 - 2016/11/29	2nd PhD Students Meeting of the Mind Brain College of the University of Lisbon, Lisbon Member of Organizing Committee Poster presentation entitled: "Electric field distribution in the lumbar spinal cord during trans-spinal magnetic stimulation." (2016/11/28 - 2016/11/28) Conference (Member of the Organising Committee)	Universidade de Lisboa Faculdade de Medicina, Portugal
2016/06/02 - 2016/06/03	Brain Imaging: an introductory workshop on research and clinical applications Member of the organizing committee. Principles and applications of imaging techniques in neurosciences: immunofluorescence, calcium imaging, fMRI acquisition and analysis, MRI diffusion-weighted imaging, nuclear medicine techniques in brain imaging, electroencephalography as image: principles and applications. Hands-on on FSL and Travis software tools on MRI diffusion-weighted imaging analysis. (2016/06/02 - 2016/06/03) Workshop (Co-organisor)	Universidade de Lisboa Faculdade de Medicina, Portugal Universidade de Lisboa Faculdade de Ciências, Portugal

## Event participation

	Activity description Type of event	Event name Institution / Organization
2023/02/25 - 2023/02/25	(PT) "Modelação Computacional de Estimulação Cerebral Não Invasiva com SIMNIBS: uma abordagem "hands-on". Workshop	ENEED - XVIII Encontro Nacional de Estudantes de Engenharia Biomédica Universidade de Aveiro, Portugal
2023/02/19 - 2023/02/22	Poster entitled "Model-guided Transcutaneous Direct Current Stimulation of the Brain and Spinal Cord to repair ALS-induced motor dysfunctions" (On-demand symposium) Conference	5th International Brain Stimulation Conference 2023 Lisbon, Portugal Elsevier Inc, United States
2023/02/19 - 2023/02/22	Poster entitled "Effect of tDCS montages in EEG-based functional connectivity of the sensorimotor network" (co-author) Conference	5th International Brain Stimulation Conference 2023 Lisbon, Portugal Elsevier Inc, United States
2022/09/04 - 2022/09/08	Poster entitled "TH 183. Relevance of realistic human models to guide non invasive spinal stimulation: a review of current findings" (co-author)	32nd International Congress of Clinical Neurophysiology, ICCN 2022, Geneva, Switzerland International Federation of Clinical

Congress

Neurophysiology, United States

2022/07/11 - 2022/07/15

Poster with flash presentation entitled "How the Number and Distance of Electrodes Change the Induced Electric Field in the Cortex during Multichannel tDCS"

44th International Engineering in Medicine and Biology Conference EMBC 2022, Glasgow, United Kingdom  
IEEE, United States

Conference

2021/06/28 -  
2021/06/30

Poster presentation entitled: "Re-connecting the Motor Brain in ALS with Electrical Stimulation"

Ciência 2021 – Science and Technology in Portugal Summit (online)

Conference

Fundação para a Ciência e a Tecnologia, Portugal

2021/06/16 - 2021/06/17

Poster presentation entitled "Predicting the Effects of Transcranial Direct Current Stimulation with realistic head models based on MRI/DTI data"

1st ISMRM Iberian Chapter Annual Meeting (online)

Meeting

Instituto Superior Técnico  
Departamento de Física, Portugal

2019/11/12 - 2019/11/13

5th Meeting of the Mind-Brain College of the University of Lisbon, Lisboa (Portugal)  
Co-chair in oral communications session.

5th Meeting of the Mind-Brain College of the University of Lisbon

Conference

Universidade de Lisboa Faculdade de Medicina, Portugal

2019/07/08 -  
2019/07/10

Poster presentation entitled "Promoting axonal regeneration using non-invasive direct current stimulation".

Ciência'19 - Encontro com a Ciência e Tecnologia em Portugal

Conference

Governo da República Portuguesa  
Ministério da Ciência Tecnologia e Ensino Superior, Portugal

2019/06 - 2019/06

Participant and co-author in poster presentation entitled "Neuromodulation of Lower Limb Motor Pathways with Trans-spinal Direct Current Stimulation: an overview of current findings".

4th IC CIIEM: Health, Well-being and Ageing in the XXI century

Conference

Escola Superior de Saúde Egas Moniz, Portugal

2019/02/13 - 2019/02/15

Workshop on statistics - from basic to advanced level  
Descriptive statistics, correlation methods, application of statistical test, analysis of variance and data modelling in basic and clinical sciences - fundamentals and applications using the SPSS and R softwares.

Workshop on statistics - from basic to advanced level

Workshop

Universidade de Lisboa Faculdade de Medicina, Portugal

2018/07/02 -  
2018/07/04

Poster presentation entitled "Transcutaneous Direct Current Stimulation of the Cervical Spinal Cord:

Ciência '18 - Encontro com a Ciência e Tecnologia em Portugal

combining modelling and experimental studies."

Conference

Governo da República Portuguesa  
Ministério da Ciência Tecnologia e  
Ensino Superior, Portugal

2018/06/21 -  
2018/06/23

Poster presentation entitled  
"Promoting axonal regeneration in  
motor neuron diseases using  
noninvasive electrical stimulation"

Workshop

Workshop on Integrative approaches  
in Neurodegeneration

Universidade de Lisboa Faculdade de  
Ciências, Portugal

2017/05/24 -  
2017/05/26

Poster presentation entitled  
"Neuromodulation of Lower Limb Motor  
Circuitry with Transcutaneous Lumbar  
Spinal Cord Direct Current Stimulation."

Conference

XI PhD CAML Students Meeting FMUL-  
iMM

Universidade de Lisboa Faculdade de  
Medicina, Portugal

2017/03/05 -  
2017/03/08

Poster presentation entitled "Influence  
of electrode configuration in  
neuromodulation of cervical spinal cord  
during non-invasive direct current  
stimulation."

Conference

2nd International Brain Stimulation  
Conference

2016/09/07 -  
2016/09/10

Poster presentation entitled "Electric  
Field Distribution in the Lumbar Spinal  
Cord during Trans-Spinal Magnetic  
Stimulation."

Conference

6th International Conference on  
Transcranial Brain Stimulation 2016

Georg-August-Universität Göttingen  
Department of Cellular Neurobiology,  
Germany

2016/03/30 -  
2016/04/01

Poster presentation entitled  
"Transcutaneous spinal direct current  
stimulation of the cervical spine region."

Conference

X PhD CAML Students Meeting FMUL-  
iMM

Universidade de Lisboa Faculdade de  
Medicina, Portugal

2015/12/02 - 2015/12/02

Poster presentation: Modelling  
Biophysical Effects of Electromagnetic  
Fields in Living Tissue, P.C.  
Miranda, R. Salvador, C. Wenger, S.R.  
Fernandes.

Conference

1st PhD Students Meeting of the Mind  
Brain College of the University of  
Lisbon

Universidade de Lisboa Faculdade de  
Medicina, Portugal

2015/08/25 -  
2015/08/29

Poster presentation entitled  
"Transcutaneous Spinal Cord  
Stimulation: Modeling the Electric Field  
Distribution using the Finite Element  
Method."

Conference

37th Annual International Conference  
of the IEEE Engineering in Medicine  
and Biology Society, Milan, Italy

IEEE Engineering in Medicine and  
Biology Society, United States

2015/03/26 -  
2015/03/27

Poster presentation entitled  
"Transcutaneous spinal direct current  
stimulation: Modelling the electric field  
distribution in the spine and assessing  
the clinical relevance of tsDCS."

IX PhD CAML Students Meeting -  
FMUL-iMM

Universidade de Lisboa Faculdade de  
Medicina, Portugal



## Conference

**Jury of academic degree**

	Theme Role	Candidate name (Type of degree) Institution / Organization
2023/02/06	Master thesis: "Development of an Electrical Impedance Tomography Algorithm to Estimate the Scalp and Skull Conductivity", member of jury of the defense (Thesis) Main arguer	Catarina Camarate (Master) Universidade de Lisboa Faculdade de Ciências, Portugal
2022/11/25	Master Thesis: PosturAll: "A Posture Assessment Software for Children", president of jury of defense President of the jury	Ana Beatriz Neves (Master) Universidade de Lisboa Faculdade de Ciências, Portugal
2022/09	Master thesis: "Cell-to-cell Connectivity Simulation as a Tool to predict the effect of Non-Invasive Electric Brain Stimulation" - member of defense jury, reviewer (Thesis) Arguer	Mathis Stumpf (Master) Technische Universitat Darmstadt, Germany

**Committee member**

	Activity description Role	Institution / Organization
2017/05/27 - 2017/05/27	PET-MRI School (PSMR 2017 Satellite School), Lisbon (Portugal) Member of Organizing Committee Member	Universidade de Lisboa Instituto de Biofísica e Engenharia Biomédica, Portugal

**Conference scientific committee**

	Conference title	Conference host
2022/08/18 - 2022/08/19	Brain and Human Body Modeling Conference 2022	The Martinos Center for Biomedical Imaging at Massachusetts General Hospital (MGH), Boston, US
2017/05/29 - 2017/05/31	PSMR 2017 - 6th Conference on PET-MRI and SPECT-MRI	Lisbon (Portugal)

**Consulting**

	Activity description	Institution / Organization
2023/02/01 - Current	MSc project: "The effect of transcranial alternate current stimulation (tACS) on slow brain rhythms."	FHWien der WKW, Austria

2021/12/01 - 2022/09/13	MSc project: "Cell-to-cell Connectivity Simulation as a Tool to predict the effect of Non-Invasive Electric Brain Stimulation"	Technische Universitat Darmstadt, Germany
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## Course / Discipline taught

	Academic session	Degree Subject (Type)	Institution / Organization
2023/03/02 - 2023/03/02	PhD/MSc programme in Neurosciences - Clinical Neurophysiology: Transcranial Magnetic Stimulation	Neurociências (Doutoramento)	Universidade de Lisboa Faculdade de Medicina, Portugal
2022/09 - 2023/02/28	Master programme in Biophysics and Biomedical Engineering - Bioelectricity and Electrophysiology	Ciências da Engenharia - Engenharia Biomédica e Biofísica (Mestrado)	Universidade de Lisboa Faculdade de Ciências, Portugal
2022/11/22 - 2022/11/22	PhD/MSc programme: Cognitive Sciences - Technologies for Integrative Analysis of the Nervous System: Transcranial Neural Stimulation	Ciência Cognitiva (Doutoramento)	Universidade de Lisboa Faculdade de Medicina, Portugal
2022/02/14 - 2022/08/31	Master in Physiotherapy - Human Movement and Motor Control	Fisioterapia (Mestrado integrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal
2022/02/14 - 2022/08/31	Master programme in Physiotherapy - Physiotherapy in Adult Neurologic Conditions	Fisioterapia (Mestrado integrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal
2022/02/22 - 2022/02/22	Transcranial Magnetic Stimulation, in Module - Clinical Neurophysiology	Neurociências (Doutoramento)	Universidade de Lisboa Faculdade de Medicina, Portugal
2021/10/21 - 2021/10/21	Transcranial Neural Stimulation, in Module IIa - Technologies for Integrative Analysis of the Nervous System	Ciências Biomédicas (Doutoramento)	Universidade de Lisboa Faculdade de Medicina, Portugal
2021/04/01 - 2021/08/31	Master programme in Physiotherapy - Human movement and Motor control	Physiotherapy (Mestrado integrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal
2021/04/01 - 2021/08/31	Master Programme in Physiotherapy - Physiotherapy in Adult Neurologic Conditions	Fisioterapia (Mestrado integrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde

2020/04/01 - 2020/08/31	Master programme in Physiotherapy - Physiotherapy in Adult Neurologic Conditions	Fisioterapia (Mestrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal
2020/04/01 - 2020/08/31	Master programme in Physiotherapy - Human Movement and Motor Control	Fisioterapia (Mestrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal
2019/10/01 - 2020/01/03	BSc in Medical Imaging and Radiotherapy - General Physics	Imagem Médica e Radioterapia (Licenciatura)	Escola Superior de Saúde da Cruz Vermelha Portuguesa, Portugal
2019/10/01 - 2020/01/03	BSC in Cardiopneumology - Biosignal Processing	Cardiopneumologia (Licenciatura)	Escola Superior de Saúde da Cruz Vermelha Portuguesa, Portugal
2019/04/01 - 2019/08/31	Master programme in Physiotherapy - Human Movement and Motor Control	Fisioterapia (Mestrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal
2019/04/01 - 2019/08/31	Master programme in Physiotherapy - Physiotherapy in Adult Neurologic Conditions	Fisioterapia (Mestrado)	Instituto Politécnico de Lisboa Escola Superior de Tecnologia da Saúde de Lisboa, Portugal

## Other jury / evaluation

	Activity description	Institution / Organization
2022/12 - Current	Guest Editor of Special Issue of Frontiers in Human Neuroscience entitled "Emerging Talents in Human Neuroscience: Neuromodulation 2023"	Frontiers Media SA, Switzerland
2022/08/01 - Current	Guest Editor, Physics and Medicine in Biology Special Issue entitled "Electromagnetic Modeling for Brain Stimulation"	IOP Publishing USA, United States
2022 - Current	Reviewer - Frontiers in Human Neuroscience	Frontiers Media SA, Switzerland
2022 - Current	Reviewer - Journal of NeuroEngineering and Rehabilitation	Springer Nature, Luxembourg
2022 - Current	Reviewer - Journal of Neurophysiology and Neurological Disorders	

2022 - Current	Reviewer - Journal of Neurologic Physical Therapy	Wolters Kluwer, Italy
2022 - Current	Reviewer - Neurology Hidawi	
2021/02 - Current	Reviewer - Neurophysiologie Clinique	Elsevier BV, Netherlands
2020/07 - Current	Reviewer - Medical Engineering and Physics - Elsevier	Elsevier BV, Netherlands