

# Laura Bonzano

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## Education

2005

### **PhD in Bioengineering and Bioelectronics**

University of Genoa, Genoa, Italy

2001

### **Degree in Biomedical Engineering (five-year program)**

Final grade: 110/110 cum laude

University of Genoa, Genoa, Italy

## Academic Experience

2019 - Present

### **Associate Professor (MEDS-26/D – Advanced Medical and Surgical Technology and Methodology)**

University of Genoa, Genoa, Italy

2016 - 2019

### **Tenure-Track Researcher (Type B, Art. 24 c.3-b Law 240/10)**

University of Genoa, Genoa, Italy

2010 - 2016

### **Fixed-Term Researcher (Art. 1, Paragraph 14, Law 230/05)**

University of Genoa, Genoa, Italy

2005 - 2009

### **Research Fellow**

University of Genoa, Genoa, Italy

## Teaching Activities

### **Teaching support contract:**

- Human Physiology, Bachelor's Degree in Biomedical Engineering, University of Genoa, Academic Year 2004/2005: development and application of experimental protocols concerning voluntary movement control and sensorimotor integration in humans.
- Biomedical Technologies, Bachelor's Degree in Biomedical Engineering, University of Genoa, and Fundamentals of Neuroengineering, Bachelor's Degree in Electronic Engineering, University of Pavia, Academic Years 2002/2003, 2003/2004, 2004/2005: practical sessions on the neuron network simulation program "Neuron".

### **Courses at the University of Genoa:**

- From the academic year 2010/2011 to 2014/2015: Integrated Course in Neurology (Advanced Magnetic Resonance Imaging Techniques: Diffusion, Diffusion Tensor, Perfusion), as part of the Degree Course in Medicine and Surgery
- From the academic year 2010/2011 to 2014/2015: Integrated Course in Neurology – professionalizing activities (Advanced Magnetic Resonance Imaging Techniques: physical principles, practical notes, safety rules, and quantitative image processing techniques), as part of the Degree Course in Medicine and Surgery
- From the academic year 2011/2012 to 2013/2014: Functional Neuroimaging, as part of the Specialization School in Neurology
- From the academic year 2011/2012 to present: Information Processing Systems – Integrated Course in Kinesiology, Biomechanics, and General Rehabilitation, as part of the Degree Course in Health Professions in Physiotherapy
- From the academic year 2012/2013 to present: Information Processing Systems – Integrated Course in Developmental Rehabilitation Sciences III, as part of the Degree Course in Health Professions in Neuro and Psychomotor Therapy of Developmental Age
- From the academic year 2012/2013 to 2016/2017: Clinical Neuroscience, as part of the Master's Degree Course in Biomedical Engineering
- In the academic years 2012/2013 and 2014/2015: Bioimaging in Neurosciences – Neuroscience Course, as part of the Training Pathway in ICT Information and Communication Technologies, ISICT Higher Institute of Studies in Information and Communication Technologies
- From the academic year 2013/2014 to present: Information Processing Systems – Integrated Course in Movement Analysis, as part of the Master's Degree Course in Sport Sciences and Techniques
- In the academic year 2014/2015: Advanced Mathematical and Statistical Sciences oriented to MRI, as part of the Master in Specialized Skills in Magnetic Resonance for Medical Radiology Technicians
- From the academic year 2017/2018 to present: Medical Technologies for Clinical Neuroscience, as part of the Master's Degree Course in Biomedical Engineering
- From the academic year 2019/2020 to present: Advanced Assessment Methodologies in Rehabilitation, as part of the Master's Degree Course in Rehabilitation Sciences of Health Professions
- From the academic year 2019/2020 to present: Experimental Research in Rehabilitation and Evidence-Based Rehabilitation Methodology, as part of the Master's Degree Course in Rehabilitation Sciences of Health Professions
- From the academic year 2020/2021 to present: Computer Science and Applied Research Laboratory, as part of the Master's Degree Course in Rehabilitation Sciences of Health Professions
- From the academic year 2021/2022 to 2022/2023: Techniques Applied to Psychometrics, as part of the Degree Course in Orthoptics and Ophthalmic Assistance
- In the academic year 2024/2025: Information Processing Systems – Integrated Course in Technological Innovation and Health Research, as part of the Bachelor's Degree Course in Health Assistance

### **University Teaching at Other Institutions:**

- Master "Clinical Neurosciences: Evaluation, Diagnosis, and Neuropsychological and Neuromotor Rehabilitation," at the Catholic University of Milan – Milan campus (annually, from academic year 2016/2017 to present), delivering a lecture titled "Magnetic Resonance Imaging and its Applications in Motor Rehabilitation Research and Clinical Practice"
- Master "Clinical Neurosciences: Evaluation, Diagnosis, and Neuropsychological and Neuromotor Rehabilitation," at the Catholic University of Milan – Brescia campus (annually, from academic year 2020/2021 to present), delivering a lecture titled "Magnetic Resonance Imaging and its Applications in Motor Rehabilitation Research and Clinical Practice".

### Invited Speaker:

- "First European School of Neuroengineering Massimo Grattarola", held in Venice in June 2003, presenting a paper entitled "Non-conventional electrophysiological techniques: MEA (MicroElectrode Array). Experimental set-up for electrophysiological experiments, culture protocols for culturing dissociated neurons, chemical and electrical stimulation to induce particular patterns in neuronal network activity"
- Residential Course "Clinical Applications of Advanced Imaging Techniques", accredited by the National Commission for Continuing Education in Medicine, held at IRCCS Foundation "Casimiro Mondino Neurological Institute" in Pavia in June 2008, presenting a paper entitled "Perfusion: technique"
- Refresher Course "Neuroimaging in neurology", organized by the "Neuroimaging" Study Group of the SIN - Italian Society of Neurology and held in Genoa in March 2011, presenting a paper entitled "Diffusion, Diffusion Tensor"
- 2013 regional scientific congress and regional assembly AIFI (Italian Association of Physiotherapists) Liguria "Radiological imaging in rehabilitation", in Loano (SV) in May 2013, presenting a paper entitled "Functional MRI: study of the sensory-motor system, application in multiple sclerosis"
- "Graduation Day of the Master in Rehabilitation of Musculoskeletal Disorders" at the University Campus of Savona in October 2013, presenting a Lectio Magistralis entitled "Functional magnetic resonance imaging in clinical practice and research in physiotherapy"
- Scientific congress organized by the Italian Association of Magnetic Resonance in Medicine, in Perugia in October 2013, participating in the debate "Professional skills requested for applying to one position of MR Scientist in a Radiology Department" with a paper entitled "The "MR scientist": Biomedical engineer"
- "Capita Selecta in rehabilitation of musculoskeletal disorders - new technologies applied to research in rehabilitation", at the University Campus of Savona in December 2013, presenting a paper entitled "Introduction to Functional Magnetic Resonance Imaging and its applications in rehabilitation research and clinical practice"
- Scientific congress "Technological innovation in complex neurological diseases" organized by the Italian Society of Rehabilitation of Highly Specialized (SIRAS), in Genoa in October 2015, presenting a paper entitled "Active rehabilitation is able to modify the organization of the Central Nervous System"
- Scientific congress "Research in MS: technologies at the service of rehabilitation" organized by the Italian Multiple Sclerosis Association (AISM) in December 2017, presenting a paper entitled "Basic principles and advanced techniques of Magnetic Resonance: diffusion tensor, functional MRI" and coordinating the group work on "Practical aspects of the main technologies adopted in rehabilitation research in multiple sclerosis"
- Invited as chair of the session "Artificial intelligence and Machine learning in digital health" as part of the "NanoInnovation 2023 Congress" - YoungInnovation in collaboration with the Italian Society for Translational Research and Health Professions (SIRTEPS), Rome, 18-22 September
- "Symposium XII - The future is in our hands. How manual dexterity and perceptual representation of the hand can influence manual control", as part of the national congress of the Italian Society of Psychophysiology and Cognitive Neuroscience (SIPF), in Cesena in September 2024, presenting a paper entitled "Don't plan, just do it: Cognitive and sensorimotor contributions to manual dexterity".

## Research Interests

The research activity carried out by Prof. Laura Bonzano concerns the development and application of biomedical technologies in the field of neuroscience and rehabilitation, with specific attention to methodological and translational aspects. In particular, the focus of investigation is the nervous system, approached at different scales: from basic research using in vitro neuronal networks in animal models, to the study of the brain in vivo in humans, from the perspective of its structure and function in relation to pathology and/or behavioral data.

During her PhD studies (2002-2005), Laura Bonzano conducted her research within the “Neuroengineering and bio-nano technologies (NBT)” group at the Department of Biophysical and Electronic Engineering (DIBE) of the University of Genoa (supervisor: Prof. Sergio Martinoia). The main objective of the research was to interface neurons with standard and microelectronic transducers capable of controlling and modifying their electrophysiological activity, creating hybrid neuro-electronic systems.

In this context, she collaborated in the development of a new workstation for the acquisition and processing of neuronal electrophysiological signals at the Human Physiology section of the Department of Experimental Medicine (DIMES) at the University of Genoa. Her research activity mainly concerned the definition of experimental protocols to test the effect of pharmacological compounds on simplified brain models (networks of thousands of neurons) and analysis procedures for interpreting electrophysiological data. Patterns of activity in primary cultures of cortical neurons extracted from rat embryos were investigated and modified by stimulation with chemicals or electrical pulses, thanks to a multi-site recording and stimulation technique based on planar Micro Electrode Arrays (MEA). The effects of stimulation on synaptic transmission were evaluated, with particular attention to excitatory pathways through the administration of agonist and antagonist substances of NMDA and non-NMDA receptors to the culture medium. The experimental methodology adopted represents a potential method to measure how structural changes in a neuronal network can induce changes in the computational properties of the network itself.

These experimental studies found direct application within the European research project “Neurobit – A bioartificial brain with an artificial body: training a cultured neural tissue to support the purposive behavior of an artificial body.” The aim was to create a closed loop consisting of a “brain” (network of cortical neurons coupled to microelectrode arrays) and a “locomotor apparatus” (robotic system) able to communicate with each other, providing information bidirectionally.

The experience gained in the study of neuronal networks during their development in vitro subsequently allowed Prof. Bonzano to carry out, on solid scientific grounds, her research activity on the structural and functional networks of the human brain in vivo, at the Neurology Clinic of the Department of Neurosciences, Rehabilitation, Ophthalmology, Genetics and Maternal-Child Sciences (DINOEMI) of the University of Genoa (from April 2005 to the present, first as a research fellow, then from May 2010 to April 2016 as a fixed-term researcher (art.1 paragraph 14 L. 230/05), from December 2016 to December 2019 as a fixed-term researcher “type b” (art. 24 c.3-b L. 240/10), and finally since December 2019 as Associate Professor).

Until 2018, she conducted research studies based on the use of magnetic resonance imaging (MRI) at the “Magnetic Resonance Research Center on Nervous System Diseases,” equipped with a 1.5 Tesla MRI scanner and considered an advanced research facility for the study of central nervous system diseases, especially demyelinating diseases such as Multiple Sclerosis (MS).

In 2018, the “Research Center on Magnetic Resonance in Multiple Sclerosis and Similar Diseases” was established at the San Martino Polyclinic Hospital and the University of Genoa. This center is equipped with a 3 Tesla SIEMENS MAGNETOM Prisma scanner dedicated to scientific research. This highly innovative MRI machine, the first of its kind in Italy, is an important element for further developments in nervous system investigations. Prof. Bonzano therefore conducts her current research activity in this context, also in collaboration with the Italian Multiple Sclerosis Foundation (FISM), focusing on the optimization of image acquisition and processing protocols within specific research projects.

Neuroimaging is fundamental, as a medical technique, for the morphological study of brain lesions and the localization of structures involved in diseases. Magnetic resonance imaging (MRI) is a diagnostic technique that, exploiting the magnetic properties of protons in tissue water molecules, provides detailed images of the body. MRI is increasingly used in the study of inflammatory and degenerative diseases of the central nervous system, helping to improve diagnosis and identify effective therapies. In addition to conventional MRI, advanced MRI techniques, which require specific analysis methodologies, offer greater sensitivity in detecting brain damage and pathological specificity, allowing the exploration of the pathophysiological mechanisms of neurological diseases and providing useful markers for monitoring disease progression. In this context, diffusion MRI techniques (DWI and DTI) play an important role. Functional MRI (fMRI) also allows the

investigation of the activation of specific brain areas during various activities, offering information that can be correlated with behavioral measures, such as neuropsychological tests or motor paradigms. This is of great interest in neurological patients, but also in healthy subjects.

Also in the field of functional neuroimaging, more recently, Prof. Bonzano is working on functional near-infrared spectroscopy (fNIRS). This is an optical technique that uses light in the near-infrared band to study the hemodynamics of the cerebral cortex and derive information about neuronal activity. Thanks to its resistance to artifacts caused by head and body movements, fNIRS overcomes the limitations of fMRI and allows the evaluation of cortical activity while the subject is in motion. In particular, this equipment is used within the FISM-DIMES Joint Lab, coordinated by Prof. Marco Bove and Dr. Giampaolo Brichetto, with the active participation of Prof. Bonzano as head of neuroimaging data acquisition and processing.

In summary, Prof. Bonzano's current research line exploits innovative technologies and methodologies combined with advanced neuroimaging, neurophysiology, and neuropsychology techniques, to conduct cross-disciplinary studies in collaboration with technologists, neurologists, neurophysiologists, and neurorehabilitation specialists, in order to map brain alterations associated with various neurological diseases, diagnose specific deficits early, contribute to the development of biomarkers, and, with a translational approach, provide scientific evidence to improve therapeutic and rehabilitative approaches.

The research activities mainly develop along the following themes:

1. Innovative methods and technologies in the field of neuroimaging
2. Basic research aimed at studying the neural correlates of motor and cognitive aspects in humans
3. Translational research applied in the clinical and rehabilitative fields
4. Advanced technologies and methodologies applied to research.

## Publications

1. Vato, A., Bonzano, L., Chiappalone, M., Cicero, S., Morabito, F., Novellino, A., Stillo, G. Spike manager: A new tool for spontaneous and evoked neuronal networks activity characterization (2004) *Neurocomputing*, 58-60, pp. 1153-1161.
2. Martinoia, S., Bonzano, L., Chiappalone, M., Tedesco, M. Electrophysiological activity modulation by chemical stimulation in networks of cortical neurons coupled to microelectrode arrays: A biosensor for neuropharmacological applications (2005) *Sensors and Actuators, B: Chemical*, 108, pp. 589-596.
3. Martinoia, S., Bonzano, L., Chiappalone, M., Tedesco, M., Marcoli, M., Maura, G. In vitro cortical neuronal networks as a new high-sensitive system for biosensing applications (2005) *Biosensors and Bioelectronics*, 20, pp. 2071-2078.
4. Bonzano, L., Bove, M., Martinoia, S. Effects of NMDA and non-NMDA receptors antagonists on the dynamic behavior of cultured cortical networks (2006) *Neurocomputing*, 69 (16-18), pp. 1897-1903.
5. Bove, M., Bonzano, L., Trompetto, C., Abbruzzese, G., Schieppati, M. The postural disorientation induced by neck muscle vibration subsides on lightly touching a stationary surface or aiming at it (2006) *Neuroscience*, 143 (4), pp. 1095-1103
6. Dinia, L., Roccatagliata, L., Bonzano, L., Finocchi, C., Del Sette, M. Diffusion MRI during migraine with aura attack associated with diagnostic microbubbles injection in subjects with large PFO (2007) *Headache*, 47 (10), pp. 1455-1456.
7. Pardini, M., Bonzano, L., Roccatagliata, L., Boccardo, F., Mancardi, G., Campisi, C. Functional magnetic resonance evidence of cortical alterations in a case of reversible congenital lymphedema of the lower limb: A pilot study (2007) *Lymphology*, 40 (1), pp. 19-25.
8. Roccatagliata, L., Rocca, M.A., Valsasina, P., Bonzano, L., Sormani, M.P., Saccardi, R., Mancardi, G.L., Filippi, M., Marrosu, M.G., La Nasa, G., Cocco, E., Cherchi, V., Lugesesi, A., Di Bartolomeo, P., Farina,

- D., Ialori, C., Tartaro, A., Massacesi, L., Pagliai, F., Bosi, A., Repice, A., Konze, A., Sardanelli, F., Capello, E., Murialdo, A., Gualandi, F., Parodi, R.C., Dogliotti, L., Marmont, A., Inglese, M., Comi, G., Donelli, A., Merelli, E., Casoni, F., Cavalleri, F., Bertolotto, A., Guerrasio, A., Capobianco, M., Duca, S., Meucci, G., Papineschi, F., Mosti, S., Abruzzese, A. The long-term effect of AHSCT on MRI measures of MS evolution: A five-year follow-up study (2007) *Multiple Sclerosis*, 13 (8), pp. 1068-1070.
9. Bonzano, L., Roccatagliata, L., Levrero, F., Mancardi, G.L., Sardanelli, F. In vitro investigation of poor cerebrospinal fluid suppression on fluid-attenuated inversion recovery images in the presence of a gadolinium-based contrast agent (2008) *Magnetic Resonance in Medicine*, 60 (1), pp. 220-223.
- IF 3.0, Q2 RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING
10. Bonzano, L., Tacchino, A., Roccatagliata, L., Abruzzese, G., Mancardi, G.L., Bove, M. Callosal contributions to simultaneous bimanual finger movements (2008) *Journal of Neuroscience*, 28 (12), pp. 3227-3233.
  11. Del Sette, M., Dinia, L., Bonzano, L., Roccatagliata, L., Finocchi, C., Parodi, R.C., Sivori, G., Gandolfo, C. White matter lesions in migraine and right-to-left shunt: A conventional and diffusion MRI study (2008) *Cephalalgia*, 28 (4), pp. 376-382.
  12. Anwar, M.N., Bonzano, L., Sebastiano, D.R., Roccatagliata, L., Gualniera, G., Vitali, P., Ogliastro, C., Spadavecchia, L., Rodriguez, G., Sanguineti, V., Morasso, P., Bandini, F. Real-time artifact filtering in continuous VEPs/fMRI recording (2009) *Journal of Neuroscience Methods*, 184 (2), pp. 213-223.
  13. Bonzano, L., Pardini, M., Mancardi, G.L., Pizzorno, M., Roccatagliata, L. Structural connectivity influences brain activation during PVSAT in Multiple Sclerosis (2009) *NeuroImage*, 44 (1), pp. 9-15.
  14. Bonzano, L., Roccatagliata, L., Mancardi, G.L., Sormani, M.P. Gadolinium-enhancing or active T2 magnetic resonance imaging lesions in multiple sclerosis clinical trials? (2009) *Multiple Sclerosis*, 15 (9), pp. 1043-1047.
  15. Capello, E., Vuolo, L., Gualandi, F., Van Lint, M.T., Roccatagliata, L., Bonzano, L., Pardini, M., Uccelli, A., Mancardi, G. Autologous haematopoietic stem-cell transplantation in multiple sclerosis: Benefits and risks (2009) *Neurological Sciences*, 30, pp. S175-S177.
  16. De Feo, F., Roccatagliata, L., Bonzano, L., Castelletti, L., Mancardi, G., Traverso, C.E. Magnetic Resonance Imaging in Patients Implanted with Ex-PRESS Stainless Steel Glaucoma Drainage Microdevice (2009) *American Journal of Ophthalmology*, 147 (5), pp. 907-911.e1.
  17. Pardini, M., Garaci, F.G., Bonzano, L., Roccatagliata, L., Palmieri, M.G., Pompili, E., Coniglione, F., Krueger, F., Ludovici, A., Floris, R., Benassi, F., Emberti Gialloreti, L. White matter reduced streamline coherence in young men with autism and mental retardation (2009) *European Journal of Neurology*, 16 (11), pp. 1185-1190.
  18. Roccatagliata, L., Bonzano, L., Mancardi, G., Canepa, C., Caponnetto, C. Detection of motor cortex thinning and corticospinal tract involvement by quantitative MRI in amyotrophic lateral sclerosis (2009) *Amyotrophic Lateral Sclerosis*, 10 (1), pp. 47-52.
  19. Roccatagliata, L., Vuolo, L., Bonzano, L., Pichiecchio, A., Mancardi, G.L. Multiple sclerosis: Hyperintense dentate nucleus on unenhanced T1-weighted MR images is associated with the secondary progressive subtype (2009) *Radiology*, 251 (2), pp. 503-510.
  20. Sormani, M.P., Bonzano, L., Roccatagliata, L., Cutter, G.R., Mancardi, G.L., Bruzzi, P. Magnetic resonance imaging as a potential surrogate for relapses in multiple sclerosis: A meta-analytic approach (2009) *Annals of Neurology*, 65 (3), pp. 268-275.
  21. Pardini, M., Bonzano, L., Mancardi, G.L., Roccatagliata, L. Frontal networks play a role in fatigue perception in multiple sclerosis (2010) *Behavioral Neuroscience*, 124 (3), pp. 329-336.
  22. Sormani, M.P., Bonzano, L., Roccatagliata, L., Mancardi, G.L., Uccelli, A., Bruzzi, P. Surrogate endpoints for EDSS worsening in multiple sclerosis: A meta-analytic approach (2010) *Neurology*, 75 (4), pp. 302-309.
  23. Vuolo, L., Bonzano, L., Roccatagliata, C., Parodi, R.C., Roccatagliata, L. Reversibility of brain lesions in a case of Neuro-Behçet's disease studied by MR diffusion (2010) *Neurological Sciences*, 31 (2), pp. 213-215.

24. Avanzino, L., Tacchino, A., Abbruzzese, G., Quartarone, A., Ghilardi, M.F., Bonzano, L., Ruggeri, P., Bove, M. Recovery of motor performance deterioration induced by a demanding finger motor task does not follow cortical excitability dynamics (2011) *Neuroscience*, 174, pp. 84-90.
25. Bonzano, L., Tacchino, A., Roccatagliata, L., Mancardi, G.L., Abbruzzese, G., Bove, M. Structural integrity of callosal midbody influences intermanual transfer in a motor reaction-time task (2011) *Human Brain Mapping*, 32 (2), pp. 218-228.
26. Bonzano, L., Tacchino, A., Roccatagliata, L., Sormani, M.P., Mancardi, G.L., Bove, M. Impairment in explicit visuomotor sequence learning is related to loss of microstructural integrity of the corpus callosum in multiple sclerosis patients with minimal disability (2011) *NeuroImage*, 57 (2), pp. 495-501.
27. Sormani, M.P., Bonzano, L., Roccatagliata, L., De Stefano, N. Magnetic resonance imaging as surrogate for clinical endpoints in multiple sclerosis: Data on novel oral drugs (2011) *Multiple Sclerosis Journal*, 17 (5), pp. 630-633.
28. Frega, M., Pasquale, V., Tedesco, M., Marcoli, M., Contestabile, A., Nanni, M., Bonzano, L., Maura, G., Chiappalone, M. Cortical cultures coupled to Micro-Electrode Arrays: A novel approach to perform in vitro excitotoxicity testing (2012) *Neurotoxicology and Teratology*, 34 (1), pp. 116-127.
29. Marinelli, L., Bonzano, L., Saitta, L., Trompetto, C., Abbruzzese, G. Continuous involuntary hand movements and schizencephaly: Epilepsia partialis continua or dystonia? (2012) *Neurological Sciences*, 33 (2), pp. 335-338.
30. Mancardi, G.L., Sormani, M.P., Di Gioia, M., Vuolo, L., Gualandi, F., Amato, M.P., Capello, E., Currò, D., Uccelli, A., Bertolotto, A., Gasperini, C., Lugaresi, A., Merelli, E., Meucci, G., Motti, L., Tola, M.R., Scarpini, E., Repice, A.M., Massacesi, L., Saccardi, R., Donnini, I., Bosi, A., Guidi, S., Bagigalupo, A., Bonzano, L., Bruzzi, P., Roccatagliata, L., Antenucci, R., Granella, F., Martino, G., Rottoli, M., Solaro, C., Salvi, F., Ursino, E., Barilaro, A., Capobianco, M. Autologous haematopoietic stem cell transplantation with an intermediate intensity conditioning regimen in multiple sclerosis: The Italian multi-centre experience (2012) *Multiple Sclerosis Journal*, 18 (6), pp. 835-842.
31. Bonzano, L., Tacchino, A., Saitta, L., Roccatagliata, L., Avanzino, L., Mancardi, G.L., Bove, M. Basal ganglia are active during motor performance recovery after a demanding motor task (2013) *NeuroImage*, 65, pp. 257-266.
32. Dinia, L., Bonzano, L., Albano, B., Finocchi, C., Del Sette, M., Saitta, L., Castellan, L., Gandolfo, C., Roccatagliata, L. White Matter Lesions Progression in Migraine with Aura: A Clinical and MRI Longitudinal Study (2013) *Journal of Neuroimaging*, 23 (1), pp. 47-52.
33. Bonzano, L., Sormani, M.P., Tacchino, A., Abate, L., Lapucci, C., Mancardi, G.L., Uccelli, A., Bove, M. Quantitative Assessment of Finger Motor Impairment in Multiple Sclerosis (2013) *PLoS ONE*, 8 (5), art. no. e65225.
34. Pardini, M.\*, Bonzano, L.\*, Roccatagliata, L., Mancardi, G.L., Bove, M. The fatigue-motor performance paradox in multiple sclerosis (2013) *Scientific Reports*, 3, art. no. 2001.  
\* These authors contributed equally to this work
35. Foerster, B.R., Dwamena, B.A., Petrou, M., Carlos, R.C., Callaghan, B.C., Churchill, C.L., Mohamed, M.A., Bartels, C., Benatar, M., Bonzano, L., Ciccarelli, O., Cosottini, M., Ellis, C.M., Ehrenreich, H., Filippini, N., Ito, M., Kalra, S., Melhem, E.R., Pyra, T., Roccatagliata, L., Senda, J., Sobue, G., Turner, M.R., Feldman, E.L., Pomper, M.G. Diagnostic accuracy of diffusion tensor imaging in amyotrophic lateral sclerosis: A systematic review and individual patient data meta-analysis (2013) *Academic Radiology*, 20 (9), pp. 1099-1106.
36. M. Bergamino, L. Saitta, L. Barletta, L. Bonzano, G. L. Mancardi, L. Castellan, J. L. Ravetti, and L. Roccatagliata, "Measurement of blood-brain barrier permeability with t1-weighted dynamic contrast-enhanced MRI in brain tumors: a comparative study with two different algorithms", *ISRN Neurosci*, vol. 2013, p. 905279, 2013.
37. Bonzano, L., Tacchino, A., Bricchetto, G., Roccatagliata, L., Dessypris, A., Feraco, P., Lopes De Carvalho, M.L., Battaglia, M.A., Mancardi, G.L., Bove, M. Upper limb motor rehabilitation impacts white matter microstructure in multiple sclerosis (2014) *NeuroImage*, 90, pp. 107-116.

38. Pardini, M., Bergamino, M., Bommarito, G., Bonzano, L., Luigi Mancardi, G., Roccatagliata, L. Structural correlates of subjective and objective memory performance in multiple sclerosis (2014) *Hippocampus*, 24 (4), pp. 436-445.
39. Bergamino, M., Bonzano, L., Levrero, F., Mancardi, G.L., Roccatagliata, L. A review of technical aspects of T1-weighted dynamic contrast-enhanced magnetic resonance imaging (DCE-MRI) in human brain tumors (2014) *Physica Medica*, 30 (6), pp. 635-643.
40. Tacchino, A., Bove, M., Roccatagliata, L., Luigi Mancardi, G., Uccelli, A., Bonzano, L. Selective impairments of motor sequence learning in multiple sclerosis patients with minimal disability (2014) *Brain Research*, 1585, pp. 91-98.
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43. Bonzano, L., Tacchino, A., Roccatagliata, L., Inglese, M., Mancardi, G.L., Novellino, A., Bove, M. An engineered glove for investigating the neural correlates of finger movements using functional magnetic resonance imaging (2015) *Frontiers in Human Neuroscience*, 9, art. no. 503.
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45. Bonzano, L., Roccatagliata, L., Ruggeri, P., Papaxanthis, C., Bove, M. Frontoparietal cortex and cerebellum contribution to the update of actual and mental motor performance during the day (2016) *Scientific Reports*, 6, art. no. 30126.
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47. Pedullà, L., Brichetto, G., Tacchino, A., Vassallo, C., Zaratini, P., Battaglia, M.A., Bonzano, L., Bove, M. Adaptive vs. non-adaptive cognitive training by means of a personalized App: a randomized trial in people with multiple sclerosis (2016) *Journal of NeuroEngineering and Rehabilitation*, 13 (1), pp. 1-10.
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