

## **Personal information**

**Name, Surname:** Monica Biggio

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## **Work experience**

**July 2023 – Present: Researcher** (Type A, Art. 24, Paragraph 3-b, Law 240/10) in Applied Medical Technical Sciences at the Department of Neurosciences, Rehabilitation, Ophthalmology, Genetics, and Maternal-Infant Sciences (DINOEMI), University of Genoa.

**September 2020 – June 2023: Postdoctoral researcher** at University of Genoa - Department of Experimental Medicine (DIME), section of Human Physiology on a project with title: *“Evaluation of the applicability of Action Observation and Motor Imagery techniques in Multiple Sclerosis with progressive course.”*

**March 2020 – August 2020: Research fellowship - consolidator** at University of Genoa - Department of Experimental Medicine (DIME), section of Human Physiology on a project with title: *“Use of a prosthetic aid with biofeedback to monitor the rehabilitative process of person with Multiple Sclerosis.”*

**June 2019 – July 2019:** Visiting Researcher presso DRCMR – Danish Research Center for Magnetic Resonance (Hvidovre Hospital, Kettegaard Allé 30 in 2650, Hvidovre) in collaboration with prof. Hartwig Siebner, in a project studying brain-muscle communication

**March 2018 – February 2020:** Research fellowship from the Italian Multiple Sclerosis Foundation carried out at the Sensorimotor Integration Lab and the Joint-Lab DIME-FISM, as part of a project aimed at studying cortico-brainstem functionality in multiple sclerosis through neurophysiological and neuroimaging techniques.

**February 2018 – March 2018: Research fellowship** at University of Genoa - Department of Experimental Medicine (DIME), section of Human Physiology on a project with title: *“Monitoring and integrating the rehabilitative process of persons with Multiple Sclerosis by means of a prosthetic aid with biofeedback.”*

## **Education and training**

**October 2020 – March 2021:** AS – AI: Advanced School in AI - Interdisciplinary Research and Applications in Machine Learning, Brain, Mind and Society in collaboration with CNR Institute of Roma. Final project title: *“Developing machine learning classification and clustering algorithms for diagnosis of Multiple Sclerosis”*

**November 2014 - October 2017:** PhD school in Neuroscience at University of Genoa, Department of Experimental Medicine (DIME). Thesis title: *Space in action: Motor aspects of peripersonal space representation.*

**Settembre 2015:** Summer School *“Integrazione di metodi e tecniche per la ricerca, la clinica e la riabilitazione in psicofisiologia e neuroscienze”*, Università cattolica S. Cuore, Milan

**April 2014 – October 2014:** Internship in Neuropsychology at University of Genoa, Department of Experimental Medicine (DIMES) in collaboration with con University of Turin, Department of Psychology.

**May 2013 – July 2013:** Curricular Internship in Informatics at University of Turin, Department of Computer Science.

**September 2011 – March 2014:** Master degree in Mind Science, University of Turin

**September 2008 – November 2011:** Bachelor degree in Psychological Science and Techniques, University of Genoa

### **Research project**

**FISM 2017** (Prog N° 2017/B/1): A combined neurophysiological and neuroimaging approach to explore the cortico-brainstem functionality in multiple sclerosis. Duration: 24 months. Role: principal investigator.

**FISM 2022** (Prog N° 2022/R-Multi/040): Disentangling Blink Reflexes in Multiple Sclerosis through explainable artificial intelligence systems. Duration: 36 months. Role: principal investigator.

### **Teaching activities**

#### **Teaching Activities at the University of Genoa**

##### **Bachelor's Degree in Physiotherapy**

"Neuropsychological Rehabilitation" (30 hours), module of Neuropsychology and Neuropsychological Rehabilitation

##### **Bachelor's Degree in Sports and Exercise Sciences**

"Clinical Psychology" (20 hours), part of the General Sport Psychology course module.

##### **Bachelor's Degree in Orthoptics and Ophthalmologic Assistance**

"Applied Techniques in Psychometrics" (10 hours), part of the Human Sciences course module.

##### **Bioengineering Degree Program**

From 2019 – 2023: Teaching support contract (D.R. No. 251 of 10/05/2013) for the course "Medical Technologies for Clinical Neuroscience", University of Genoa.

A.Y. 2020 – 2021: Teaching support contract for the course "Physiology" (15 hours), Biomedical Engineering Degree Program.

### **Publications**

1. **Biggio, M.**, Iester, C., Cattaneo, D., Cutini, S., Bisio, A., Pedullà, L., Torchio, A., Bove, M., Bonzano, L. Should you hold onto the treadmill handrails or not? Cortical evidence at different walking speeds. J Neuroeng Rehabil. 2025 Jan 16;22(1):5. doi: 10.1186/s12984-025-01543-w. PMID: 39815334; PMCID: PMC11736955.

2. Salerno, P., Job, M., Iurato, M., **Biggio, M.**, Testa, M., Bove, M., Bisio, A. *Insights into proprioceptive acuity assessed with a dynamic joint position reproduction task*. J Electromyogr Kinesiol. 2025 Apr;81:102984. doi: 10.1016/j.jelekin.2025.102984. Epub 2025 Jan 20. PMID: 39862733.
3. Iester, C., **Biggio, M.**, Brigadoi, S., Bisio, A., Brichetto, G., Cutini, S., Bonzano, L., Bove, M. *Inferior Parietal Lobe Activity Reveals Bimanual Coupling and Interference*. Hum Brain Mapp. 2025 Mar;46(4):e70172. doi: 10.1002/hbm.70172. PMID: 40016905; PMCID: PMC11867931.
4. Albergoni, A., Paizis, C., Papaxanthis, C., **Biggio, M.**, Bove, M., Bisio, A. *Weight discrimination ability during an action observation task is dependent on the type of muscle contraction*. Eur J Neurosci. 2024 Dec;60(12):7025-7037. doi: 10.1111/ejn.16604. Epub 2024 Nov 17. PMID: 39551615.
5. Iester, C.\*, Bonzano, L., Biggio, M., Cutini, S., Bove, M., Brigadoi, S.\*. *Comparing different motion correction approaches for resting-state functional connectivity analysis with functional near-infrared spectroscopy data*. Neurophotonics. 2024 Oct;11(4):045001. doi: 10.1117/1.NPh.11.4.045001. Epub 2024 Oct 3. PMID: 39372120; PMCID: PMC11448702.
6. Pereira Da Silva, B., Escelsior, A., **Biggio, M.**, Zizzi, A., Belvederi Murri, M., Guglielmo, R., Inuggi, A., Delfante, F., Marengo, G., Amore, M., Serafini, G. *Reduction of peripersonal comfort space correlate with eating disorder symptoms in young adolescents: a network analysis approach*. Front Psychol. 2024 Sep 5;15:1420247. doi: 10.3389/fpsyg.2024.1420247. PMID: 39301000; PMCID: PMC11410699.
7. Fassone, M., Bisio, A., Puce, L., **Biggio M.**, Tassara F., Faelli E., Ruggeri P., Bove M. *The metronome-based methodology to monitor the stroke length changes in trained swimmers*. Frontiers in Sports and Active Living, 2023 Oct 17;5:1268146. doi: 10.3389/fspor.2023.1268146. PMID: 37915979; PMCID: PMC10616301.
8. Biggio, M., Escelsior, A., Belvederi Murri, M., Trabucco, A., Delfante, F., Pereira Da Silva, B., Bisio, A., Serafini, G., Bove, M., Amore, M. *"Surrounded, detached": the relationship between defensive peripersonal space and personality*. Front Psychiatry. 2023 Oct 13;14:1244364. doi: 10.3389/fpsyt.2023.1244364. PMID: 37900289; PMCID: PMC10603239.
9. Bonzano, L., **Biggio, M.**, Brigadoi, S., Pedullà, L., Pagliai, M., Iester, C., Brichetto, G., Cutini, S., Bove, M. *Don't plan, just do it: Cognitive and sensorimotor contributions to manual dexterity*. Neuroimage. 2023 Oct 15;280:120348. doi:10.1016/j.neuroimage.2023.120348. Epub 2023 Aug 24. PMID: 37625501.
10. Albergoni, A., **Biggio, M.**, Faelli, E., Ruggeri, P., Avanzino, L., Bove, M., Bisio, A. *Aging deteriorates the ability to discriminate the weight of an object during an action observation task*. Front Aging Neurosci. 2023 Aug 7;15:1216304. doi: 10.3389/fnagi.2023.1216304. PMID: 37609031; PMCID: PMC10440420.
11. Albergoni A., **Biggio M.**, Faelli E., Pesce, A., Ruggeri P., Avanzino L., Bove M., Bisio A. *Sensorimotor expertise influences perceptual weight judgments during observation of a sport-specific gesture*. Frontiers in in Sports and Active Living, 5 (2023). doi: 10.3389/fspor.2023.1148812
12. Iester, C., **Biggio, M.**, Cutini, S., Brigadoi, S., Papaxanthis, C., Brichetto, G., Bove, M., Bonzano, L. *Time-of-day influences resting-state functional cortical connectivity*. Frontiers in Neuroscience, 17 (2023). doi:10.3389/fnins.2023.1192674
13. **Biggio, M.**, Caligiore, D., D'Antoni, F., Bove, M., Merone, M. *Machine learning for exploring neurophysiological functionality in multiple sclerosis based on trigeminal and hand blink reflexes*. Scientific Reports 12, 21078 (2022). doi: 10.1038/s41598-022-24720-6 8

14. **Biggio, M.**, Bisio, A., Bruno, F., Garbarini, F., Bove, M. (2022) *Wearing a mask shapes interpersonal space during COVID – 19 pandemic*. Brain Sciences. May 23;12(5):682. doi:10.3390/brainsci12050682.
15. Rossi Sebastiano, A., Poles, K., **Biggio, M.**, Bove, M., Neppi-Modona, M., Garbarini, F., Fossataro, C. (2022) *Expertise and injury experience in professional skiers modulate the ability to predict the outcome of observed ski-related actions*. Psychology of Sport and Exercise. **58**:102092. doi:10.1016/J.PSYCHSPORT.2021.102092
16. **Biggio, M.**, Bisio, A., Garbarini, F., Bove, M. (2021) *Bimanual Coupling Effect During a Proprioceptive Stimulation*. Scientific Reports 11:1–9. doi:10.1038/s41598-021-94569-8
17. Canepa, P., Papaxanthis, C., Bisio, A., **Biggio, M.**, Paizis, C., Faelli, E., Avanzino, L., Bove, M. (2021) *Motor Cortical Excitability Changes in Preparation to Concentric and Eccentric Movements*. Neuroscience 475:73–82. doi:10.1016/J.NEUROSCIENCE.2021.08.009
18. Bisio, A.\*, **Biggio, M.\***, Canepa, P., Faelli, E., Ruggeri, P., Avanzino, L., Bove, M. (2021) *Primary motor cortex excitability as a marker of plasticity in a stimulation protocol combining action observation and kinesthetic illusion of movement*. European Journal of Neuroscience. 2021; 00: 1– 11. doi:[10.1111/ejn.15140](https://doi.org/10.1111/ejn.15140)
19. Mercante, B., Loi, N., Ginatempo, F., **Biggio, M.**, Manca, A., Bisio, A., Enrico, P., Bove, M., Deriu, F. (2020) *Transcutaneous trigeminal nerve stimulation modulates the hand blink reflex*. Scientific Reports, 10(1), 21116
20. **Biggio, M.**, Bisio, A., Avanzino, L., Ruggeri, P., Bove, M. (2020) *Familiarity with a tool influences peripersonal space and primary motor cortex excitability of muscles involved in haptic contact*. Cerebral Cortex Communications, Volume 1, Issue 1, tgaa065, doi:[10.1093/texcom/tgaa065](https://doi.org/10.1093/texcom/tgaa065)
21. Canepa, P., Sbragi, A., Saino, F., **Biggio, M.**, Bove, M., Bisio, A. (2020) *Thinking before Doing: a Pilot Study on the Application of Motor Imagery as a Learning Method during Physical Education Lesson in High School*. Frontiers in Sports and Active Living. 2020 Oct 6;2:550744. doi: 10.3389/fspor.2020.550744.
22. Pedullà, L., Gervasoni, E., Bisio, A., **Biggio, M.**, Ruggeri, P., Avanzino, L., Bove, M. (2020) *The last chance to pass the ball: investigating the role of temporal expectation and motor resonance in processing temporal errors in motor actions*. Social Cognitive and Affective Neuroscience 15(1), pp. 123-134
23. Garbarini, F., Calzavarini, F., Diano, M., **Biggio, M.**, Barbero, C., Radicioni, D. P., Geminiani, G., Sacco, K., Marconi, D. (2020) *Imageability effect on the functional brain activity during a naming to definition task*. Neuropsychologia, 137, 107275
24. **Biggio, M.**, Bisio, A., Ruggeri, P., Bove, M. (2019) *Defensive peripersonal space is modified by a learnt protective posture*. Scientific Reports 9(1), 6739.
25. Bisio, A., **Biggio, M.**, Avanzino, L., Ruggeri, P., Bove, M. (2019) *Kinaesthetic illusion shapes the cortical plasticity evoked by action observation*. The Journal of Physiology, 597:3233–3245.
26. Garbarini, F., Bisio, A., **Biggio, M.**, Pia, L., Bove, M. (2018). *Motor sequence learning and intermanual transfer with a phantom limb*. Cortex, 101: 181-191.
27. Bove, M., Strassera, L., Faelli, E., **Biggio, M.**, Bisio, A., Avanzino, L. and Ruggeri, P. (2017). *Sensorimotor Skills Impact on Temporal Expectation: Evidence from Swimmers*. Frontiers in Psychology. 8:1714.
28. **Biggio, M.**, Bisio, A., Avanzino, L., Ruggeri, P., Bove, M. (2017). *This racket is not mine: The influence of the tool-use on peripersonal space*. Neuropsychologia, 103: 54-58.
29. Bonassi, G., **Biggio, M.**, Bisio, A., Ruggeri, P., Bove, M., Avanzino, L. (2017). *Provision of somatosensory inputs during motor imagery enhances learning-induced plasticity in human motor cortex*. Scientific Reports, 7(1),9300.

30. Bisio, A., Avanzino, L., **Biggio, M.**, Ruggeri, P., Bove, M. (2017). *Motor training and the combination of action observation and peripheral nerve stimulation reciprocally interfere with the plastic changes induced in primary motor cortex excitability*. Neuroscience, 348: 33-40.
31. Bisio, A. \*, Garbarini, F. \*, **Biggio, M.**, Fossataro, C., Ruggeri, P., Bove, M. (2017). *Dynamic shaping of the defensive peripersonal space through predictive motor mechanisms: when the “near” becomes “far”*. Journal of Neuroscience, 0371-16.
32. Bisio, A., Avanzino, L., Lagravinese, G., **Biggio, M.**, Ruggeri, P., Bove, M. (2015). *Spontaneous movement tempo can be influenced by combining action observation and somatosensory stimulation*. Frontiers in Behavioral Neuroscience, 9, 228.