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Department of Health Science and Technology  
The Faculty of Medicine  
Neural Engineering and Neurophysiology  
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## Research profile

My research focus is to understand how sensory feedback is processed in normal or pathological situations, and to identify and treat sensory-motor impairments and disorders. I have been working on several projects investigating, for instance, the role of crossed spinal reflexes in interlimb coordination, the use of nociceptive withdrawal reflex in stroke rehabilitation and the effect of neurofeedback on musculoskeletal pain. Recently, I became passionate about methods to improve diagnosis and interventions for children with sensory motor impairments, including Sensory Processing Disorders, Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD) and Cerebral Palsy. I am currently working on the development of a protocol to identify and assess the mechanism behind sensory processing anomalies in children with ASD and ADHD.

## Qualifications

Biomedical Engineering and Science, PhD, Interlimb communication during human walking: crossed responses in the gastrocnemius muscle, Department of Health Science and Technology, Aalborg University, Denmark.

1 Oct 2010 → 1 Jan 2014

Award Date: 15 Aug 2014

Project management for scientists

May 2018 → Aug 2018

University Pedagogy

Nov 2014 → Jan 2016

Electronic Engineering, Master of Science, 110/110 summa cum laude, Modeling synaptic noise of spinal motoneurons, Applied Electronics Dept., University Roma TRE

Oct 2007 → May 2010

Electronic Engineering, Bachelor of Science, Development of Human-Machine Interface: blink detection in eye gaze analysis systems, Applied Electronics Dept., University Roma TRE

Oct 2003 → Jul 2007

## Research outputs

### Influence of skin type and laser wavelength on laser-evoked potentials

Frahm, K. S., Gervasio, S., Arguissain, F. & Mouraux, A., Nov 2023, In: European Journal of Pain. 27, 10, p. 1226-1238 13 p.

### EEG signatures of low back and knee joint pain during movement execution: a short report

Gervasio, S., Zarei, A. A. & Mrachacz-Kersting, N., 16 Aug 2023, In: Frontiers in Rehabilitation Sciences. 4, 9 p., 1216069.

### Can We Detect Sensory Processing Anomalies in Children with ADHD and ASD Using Electroencephalography?

Mazhari-Jensen, D. S., Frahm, K. S., Lauritsen, M. B., Davies, P., Gavin, W. J. & Gervasio, S., 29 Jun 2023.

### Behavioral tendencies, anxiety, and sensory processing: alpha activity at rest and brain responses to visual stimulations

Albano, F., Petrini, L. & Gervasio, S., 2022.

**Stimulation modality and noxiousness affects the 2-point discrimination threshold**  
Frahm, K. S. & Gervasio, S., Jun 2021.

**Topical capsaicin modulates the 2-point discrimination threshold – modulation depends on stimulation modality and intensity**  
Frahm, K. S., Gervasio, S., Arendt-Nielsen, L. & Andersen, O. K., Jun 2021.

**The two-point discrimination threshold depends both on the stimulation noxiousness and modality**  
Frahm, K. S. & Gervasio, S., May 2021, In: *Experimental Brain Research.* 239, 5, p. 1439-1449 11 p.

**New Insights into Cutaneous Laser Stimulation – Dependency on Skin and Laser Type**  
Frahm, K. S., Gervasio, S., Arguissain, F. & Mouraux, A., 10 Nov 2020, In: *Neuroscience.* 448, p. 71-84 14 p.

**Exploring the EEG Signatures of Musculoskeletal Pain**

Gervasio, S., Hennings, K. & Mrachacz-Kersting, N., 1 Jan 2019, *Converging Clinical and Engineering Research on Neurorehabilitation III: Proceedings of the 4th International Conference on NeuroRehabilitation (ICNR2018), October 16-20, 2018, Pisa, Italy.* Springer Publishing Company, p. 734-738 5 p. (Biosystems and Biorobotics, Vol. 21).

**Nociceptor activation during cutaneous laser stimulation depends more on skin type and laser wavelength than innervation – insights from a combined experimental and mathematical modelling approach**  
Frahm, K. S., Gervasio, S., Arguissain, F. & Mouraux, A., 2019.

**The influence of skin type and laser wavelength on laser-evoked brain responses: Preliminary results**  
Arguissain, F., Gervasio, S., Frahm, K. S. & Mouraux, A., 2019.

**Delayed muscle onset soreness in the gastrocnemius muscle attenuates the spinal contribution to interlimb communication**

Gervasio, S., Finocchietti, S., Stevenson, A. J. T. & Mrachacz-Kersting, N., Nov 2018, In: *European Journal of Applied Physiology.* 118, 11, p. 2393-2402 10 p.

**A novel stimulation paradigm to limit the habituation of the nociceptive withdrawal reflex**

Gervasio, S., Laursen, C. B., Andersen, O. K., Hennings, K. & Spaich, E. G., May 2018, In: *IEEE Transactions on Neural Systems and Rehabilitation Engineering.* 26, 5, p. 1100-1107 8 p.

**Biofeedback for reducing musculoskeletal pain**

Mrachacz-Kersting, N. & Gervasio, S., 2018, IPC No. A61B5/04, A61B5/048, A61B5/0482, A61B5/00, Patent No. WO2018059645, 5 Apr 2018

**Evidence for a supraspinal contribution to the human crossed reflex response during human walking**

Mrachacz-Kersting, N., Gervasio, S. & Marchand-Pauvert, V., 2018, In: *Frontiers in Human Neuroscience.* 12, 10 p., 260.

**Technologically-advanced assessment of upper-limb spasticity: a pilot study**

Posteraro, F., Crea, S., Mazzoleni, S., Berteanu, M., Ciobanu, I., Vitiello, N., Cempini, M., Gervasio, S. & Mrachacz-Kersting, N., 2018, In: *European Journal of Physical and Rehabilitation Medicine.* 54, 4, p. 536-544 9 p.

**Group Ia afferents likely contribute to short-latency interlimb reflexes in the human biceps femoris muscle**

Stevenson, A. J. T., Kamavuako, E. N., Geertsen, S. S., Gervasio, S., Farina, D. & Mrachacz-Kersting, N., 21 Jul 2017, *Progress in Motor Control (PMC) XI.* 2 p.

**A Brain-Computer-Interface to combat musculoskeletal pain**

Mrachacz-Kersting, N., Yao, N., Gervasio, S., Jiang, N., Palsson, T., Graven-Nielsen, T., Falla, D., Dremstrup, K. & Farina, D., 2017, *Brain-Computer-Interface Research – A state of the art summary.* Guger, C., Brendan, A. & Leuthardt, EC. (eds.). 5 ed. Springer, p. 123-130

**Sensory feedback in interlimb coordination: Contralateral afferent contribution to the short-latency crossed response during human walking**  
Gervasio, S., Voigt, M., Kersting, U. G., Farina, D., Sinkjær, T. & Mrachacz-Kersting, N., 2017, In: PLOS ONE. 12, 1, 24 p., e0168557.

**Chronic musculoskeletal pain and its effects on brain activation**  
Ebbeesen, B. D., Rasmussen, J., Gervasio, S., Graven-Nielsen, T. & Mrachacz-Kersting, N., 2015, *45th Annual Meeting of the Society for Neuroscience, Neuroscience 2015, 17-21 October 2015, Chicago, IL, USA*. Society for Neuroscience, p. No. 807.27/W1

**Motor control and motor learning**  
Mrachacz-Kersting, N., Stubbs, P. & Gervasio, S., 2015, *Grieve's Modern Musculoskeletal Physiotherapy*. Jull, G., Moore, A., Falla, D., Lewis, J., McCarthy, C. & Sterling, M. (eds.). 4 ed. Elsevier, p. 42-52

**Novel electrical stimulation paradigm to reduce habituation of the nociceptive withdrawal reflex: Preliminary results**  
Laursen, C. B., Gervasio, S., Andersen, O. K., Hennings, K. & Spaich, E. G., 2015, *45th Annual Meeting of the Society for Neuroscience, Neuroscience 2015, 17-21 October 2015, Chicago, IL, USA*. Society for Neuroscience, p. No. 268.01/BB74

**The effect of crossed reflex responses on dynamic stability during locomotion**  
Gervasio, S., Kersting, U. G., Farina, D. & Mrachacz-Kersting, N., 2015, In: *Journal of Neurophysiology*. 114, 2, p. 1034-1040

**The effect of fatigue on interlimb communication**  
Gervasio, S., Stevenson, A. J. T. & Mrachacz-Kersting, N., 2015, *45th Annual Meeting of the Society for Neuroscience, Neuroscience 2015, 17-21 October 2015, Chicago, IL, USA*. Society for Neuroscience, p. No. 67.16/N38

**Motor control and emerging therapies for improving mobility in patients with spasticity**  
Gervasio, S., Macleod, C., Esteban-Herreros, E. B., Meng, L. & Tejada, M. C., 1 Jan 2014, *Emerging Therapies in Neurorehabilitation*. Springer, p. 147-169 23 p. (Biosystems and Biorobotics, Vol. 4).

**Cortical contribution to crossed reflexes in walking humans**  
Mrachacz-Kersting, N., Gervasio, S., Farina, D. & Sinkjær, T., 2014, *Replace, Repair, Restore, Relieve : Bridging Clinical and Engineering Solutions in Neurorehabilitation: Proceedings of the 2nd International Conference on NeuroRehabilitation, ICNR2014, 24-26 June 2014, Aalborg, Denmark*. Jensen, W., Andersen, O. K. & Akay, M. (eds.). Springer, p. 575-583 (Biosystems and Biorobotics; No. 7).

**Effects of muscle pain on interlimb communication: preliminary results**  
Gervasio, S., Finocchietti, S. & Mrachacz-Kersting, N., 2014, *Book of Proceedings, ISEK 2014, XX Congress of the International Society of Electrophysiology and Kinesiology, 15-18 July 2014, Rome, Italy*. ISEK

**Interlimb communication during human walking: crossed responses in the gastrocnemius muscle**  
Gervasio, S., 2014, River Publishers. 85 p.

**Interlimb communication during human walking: crossed responses in the gastrocnemius muscle**  
Gervasio, S., 2014

**Modeling the functional dependence of stroke patients: the outcome of an improved gait training**  
Hennings, K., Gervasio, S., Andersen, O. K. & Spaich, E. G., 2014, *Replace, Repair, Restore, Relieve : Bridging Clinical and Engineering Solutions in Neurorehabilitation: Proceedings of the 2nd International Conference on NeuroRehabilitation, ICNR2014, 24-26 June 2014, Aalborg, Denmark*. Jensen, W., Andersen, O. K. & Akay, M. (eds.). Springer, p. 421-429 (Biosystems and Biorobotics; No. 7).

### **The effect of crossed responses on dynamic stability**

Gervasio, S., Kersting, U. G., Farina, D. & Mrachacz-Kersting, N., 2014.

### **Contralateral afferent contribution to crossed responses during human locomotion**

Gervasio, S., Voigt, M., Kersting, U. G. & Mrachacz-Kersting, N., 2013, *Annual Meeting of the Society for Neuroscience, Neuroscience 2013, 9-13 November 2013, San Diego, CA, USA*. Society for Neuroscience, p. No. 832.13/MM9

### **Crossed reflex reversal during human locomotion**

Gervasio, S., Farina, D., Sinkjær, T. & Mrachacz-Kersting, N., 2013, In: *Journal of Neurophysiology*. 109, 9, p. 2335-2344

### **Contralateral spinal excitability after unilateral locomotor adaptation**

Gervasio, S. & Mrachacz-Kersting, N., 2012, *Proceedings of the XIXth Congress of the International Society of Electrophysiology & Kinesiology, ISEK2012, 19-21 July 2012, Brisbane, Australia*. ISEK, p. 119, No. MOTC\_O3.3

### **Extracting motor modules as a measure of interlimb coordination**

Gervasio, S., Gizzi, L., Mrachacz-Kersting, N. & Farina, D., 2012, *Annual Meeting of the Society for Neuroscience, Neuroscience 2012, 13-17 October 2012, New Orleans, LA, USA*. Society for Neuroscience, p. No. 887.20/JJ3

### **Modeling activation of small cutaneous afferents by electrical stimulation**

Frahm, S., Gervasio, S., Grill, W. M., Mørch, C. D. & Andersen, O. K., 2012, *Proceedings of the XIXth Congress of the International Society of Electrophysiology & Kinesiology, ISEK2012, 19-21 July 2012, Brisbane, Australia*. ISEK, p. 327, No. MOSP\_P1.4

### **Motor adaptation following split-belt treadmill walking**

Stubbs, P. W. & Gervasio, S., 2012, In: *Journal of Neurophysiology*. 108, 5, p. 1225-1227

### **Lower spinal interlimb communication: evidence for functional significance**

Gervasio, S. & Mrachacz-Kersting, N., 2011, *Annual Meeting of the Society for Neuroscience, Neuroscience 2011, 12-16 November 2011, Washington, DC, USA*. Washington, DC: Society for Neuroscience, p. No. 923.13/VV27

## **Prizes**

### **Most Promising Proposal**

Gervasio, Sabata (Recipient), 14 Aug 0004

## **Press/Media**

### **Behandling af kroniske smerter**

Sabata Gervasio

08/11/2018

1 item of Media coverage

### **Donationer**

Sabata Gervasio

26/10/2018 → 26/10/2018

2 items of Media coverage

### **Hjernespil skal hjælpe børn, der sanser verden anderledes**

Sabata Gervasio & Patrik K. Telléus

29/12/2023

1 item of Media coverage

### **I fremtiden kan du måske træne smerte væk med hjernegymnastik**

Sabata Gervasio & Patrik K. Telléus

05/01/2024  
1 item of Media coverage

**Når sanserne spiller hjernen et puds: Forskere har fået et nyt syn på den autistiske hjerne**

Sabata Gervasio

09/02/2024

1 item of Media coverage

**På bølgelængde med hjernen**

Andrew James Thomas Stevenson, Mads Rovsing Jochumsen & Sabata Gervasio

08/02/2024

1 Media contribution

## Projects

**A direct measure of sensory processing anomalies**

Gervasio, S., Mazhari-Jensen, D. S., Frahm, S. & Lauritsen, M. B.

Simon Fougner Hartmanns Familiefond, Independent Research Fund Denmark

**A neurofeedback treatment for chronic musculoskeletal pain**

Gervasio, S.

Gigtforeningen

01/09/2014 → ...

**A novel stimulation paradigm to reduce the habituation of the nociceptive withdrawal reflex**

Gervasio, S.

01/09/2014 → 30/05/2018

**Interlimb coordination during human walking**

Gervasio, S. & Stevenson, A. J. T.

01/10/2010 → ...