



UNIVERSITÀ  
DEGLI STUDI  
FIRENZE

DIPARTIMENTO DI  
MEDICINA SPERIMENTALE  
E CLINICA



Fondazione  
**Don Carlo Gnocchi**  
Onlus



**PROMISE@LAB**

# **PROTOCOLS AND OUTCOME MEASURES IN REHABILITATION MEDICINE**

JOINT RESEARCH LAB

Department of Clinical and Experimental Medicine, University of Florence  
IRCCS Fondazione don Carlo Gnocchi ONLUS, Firenze

Scientific Director: Francesca Cecchi





**Affiliated Departments, Unifi: Health Sciences (DSS), Neurosciences-Pharmacological-pediatric (NEUROFARBA) and Industrial Engineering (DIEF), Departments, University of Florence, Italy**

**Joint research lab Department of Experimental and Clinical Medicine (DMSC), University of Florence - IRCCS Fondazione don Carlo Gnocchi, Florence, Italy**

The **DMSC** was established as a professional aggregation of faculty and researchers pertaining to different scientific disciplinary fields whose common goal is to promote research activities in their respective areas of expertise. clinical and experimental research are carried out in the pursuit of scientific and technological innovation and allows for the provision of advanced cultural and professional training for students at the University of Florence.

**Fondazione don Gnocchi** is a Scientific Institute of Care and Research with 27 facilities in Italy. The neuromotor rehabilitation unit of the Centre of Florence counts: 86 beds; 10 day hospital beds; +100 outpatients/day





# PROMISE@LAB MISSION

PROMISE@LAB is an **interdisciplinary research group** that gathers the diverse research and clinical expertise of:

- medical specialists (physiatrists, neurologists, geriatricians)
- physiotherapists
- psychologists
- occupational therapists
- speech therapists

Our mission is to develop and validate innovative outcome measures and rehabilitation interventions, including **rehabilitation technologies**, for persons with disability, with focus on:

- **Neurological conditions** (stroke, severe Acquired Brain Injuries (sABI) and **Parkinson's disease**)
- **Musculoskeletal conditions**

And to co-create and validate innovative interventions to promote **healthy/active aging**.



# OUR MAIN ACTIVITIES

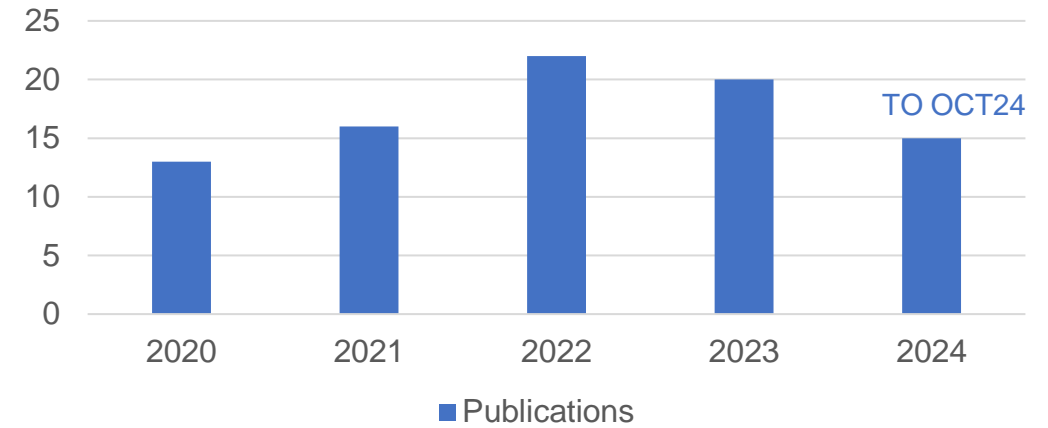
The laboratory has **experience** in conducting:

- multicentric observational studies
- clinical measures validation
- robot- and sensor-derived measures validation
- cross cultural adaptation
- case series
- usability and feasibility
- single subject design
- RCTs
- medical device testing

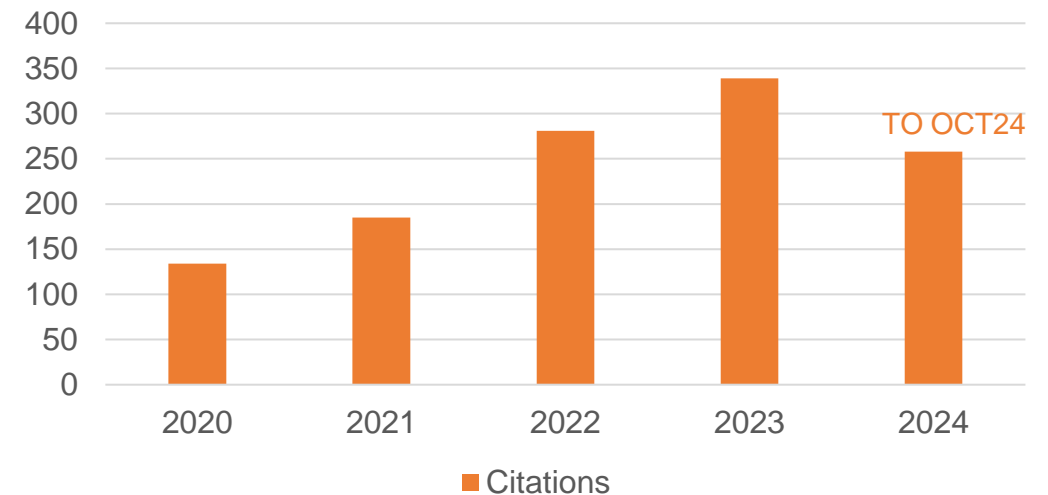
Our **research** is mainly **aimed** at:

- understanding how an **exposure** affects patients' **outcome**
- generating outcome **prediction models**
- Innovating and improving rehabilitation **assessment** and **treatment protocols**
- comparing treatments' effectiveness
- **supporting technological development** through patients' and experts' opinion
- **testing medical devices**

## Publications



## Citations





# Technologies for rehabilitation and analysis of movement



Glorea IDROGENET  
s.r.l.



MOTORE – Humanware



C-mill - Motek



Walker view - TecnoBody



Tyrosolution - Tyromotion



D-Wall - Tyromotion



Optogait - Microgate

# Neurophysiology, neuromodulation and telerehabilitation

2 5-channel **Electromyography** and **Evoked Potentials** Equipment



1 Be-PLUs **64-Channel Electroencephalograph**



Star-Stim **tDCs2** systems for EMS tDCs1



**Repetitive Magnetic Stimulator** for Neuromodulation (r-100 Magventure)



Khymeia Home Kit



Khymeia VRRS





# Some ongoing projects



## ACTIVE AGEING

**AGAPE** - Active aGeing And Personalized service's Ecosystem, AAL 2021

**Age-IT** - A novel public-private alliance to generate socioeconomic, biomedical and technological solutions for an inclusive Italian ageing society, PE8 PNRR

## STROKE

**STRATEGY** - Design and national implementation of a registry of post-stroke rehabilitation patients for systematic evaluation of processes and outcomes and development of data-driven prediction models

**REDIRECT** - A Randomized controlled trial on the effects Induced by Robot-assisted rehabilitation versus occupational therapy on the functional recovery of the upper limb in chronic post-stroke subjects

**ROOMMATE** – A cohort multiple Randomized Clinical Trial. Aggregated system Of sensors and Multimedia Monitors: technology for innovation and personalization of rehabilitation care.

**SCORES** – A multicenter RCT on the effects of upper limb robotic rehabilitation on sensory and cognitive impairments in subjects with stroke. The SCORES (Sensory and Cognitive Outcomes of Robotic Exercises in Stroke) study (PI M. Germanotta, FdG Rome)

## PARKINSON'S DISEASE

**VIRTREAD-PD** – A Randomized Controlled Trial to compare the effectiveness of a customized Virtual Reality integrated treatment with a conventional treadmill progression in patients with Parkinson's Disease

**ODIN WEARnCARE** A decision support system for personalized pathways in Parkinson disease



## SEVERE ACQUIRED BRAIN INJURIES

**PRABI** – Predictive factors of intensive inpatient rehabilitation of sABI



## REHABILITATION TECHNOLOGIES

**THE** - Tuscany Health Ecosystem; SPOKE 3: Advanced technologies, methods and materials for human health and well-being (spoke leader UNIFI; partner affiliati UNIPI, UNISI, CNR, SSSA, IMT, Esaote, Museo Galileo), PNRR SPOKE 3



# ROOMMATE

*FDG-PROMISE@LAB Leading partner*

A cohort multiple Randomized Clinical Trial - AggRegated system Of sensOrs and Multimedia Monitors: technology for innovAtion and personalizaTion of rEhabilitation care.

The ROOMMATES Consortium aims are to

- identify and develop innovative technological solutions aimed at relieving the pressure on health and care facilities;
- overcome current barriers to the implementation of technological solutions in the continuum of rehabilitation, addressing the issues of accessibility, sustainability, and equity of care for all;
- foster a shift of current procedures toward digitization of evaluation, treatment, monitoring and rehabilitation, and adopting sustainable and user friendly technologies to promote equity and accessibility of the developed system;
- support patients, as well as researchers and healthcare providers, to improve quality of care, and support caregivers to care for their close ones



# National and International Collaborations



SAN CAMILLO IRCCS SRL



# Scientific Board



**Francesca Cecchi, AP**  
**SCIENTIFIC DIRECTOR**  
MD, Psychiatrist, Geriatrician  
[publications](#)



**Marco Baccini, AdjP**  
PT, MSc  
[publications](#)



**Claudio Macchi, FP**  
Geriatrician, Cardiologist  
[publications](#)

# Group Coordinators



**Bahia Hakiki, AP**  
MD, PhD, Neurologist  
DMSC-FDG  
[publications](#)



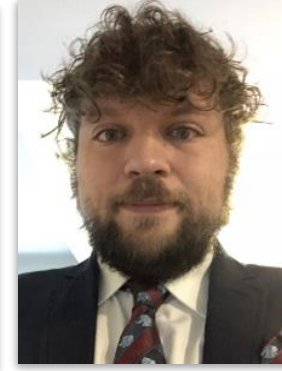
**Gemma Lombardi**  
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**Stefano Doronzio**  
PT, Msc, PhDs  
DMSC-FDG  
[publications](#)



**Diego Longo**  
PT, Msc, PhD  
DMSC  
[publications](#)

# Logistic Coordinators



**Donata Bardi**  
PSY, Msc  
Project Manager  
[publications](#)



**Chiara Castagnoli**  
PT, MScs  
Bedside research  
Coordinator  
[publications](#)

Bahia Hakiki, MD, PhD: severe acquired brain injury group coordinator

Gemma Lombardi, MD, PhD: Parkinson (PD) group coordinator

Antonello Grippo, MD, Neurophysiology group coordinator

Stefano G. Doronzio PT, Msc, PhDs: Robotics group coordinator

Diego Longo, PT, Msc, PhD: Healthy Aging group coordinator

Donata Bardi, MSc; Project Manager

Chiara Castagnoli MScs, PT: bedside research coordinator



# The Team



**Maria Angela Bagni** [?](#) [publications](#)

FP Physiology

**Giulio Cherubini** [?](#) [publications](#)

PT, PhD St.

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PT, MSc

**Chiara De Santis** [?](#) [publications](#)

MD

**Alessio Faralli** [?](#) [publications](#)

PSY, PhD

**Michele Piazzini**

PT, MSc



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**Francesca Draghi** [?](#) [publications](#)

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OT

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# Contact us!



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# Thank you!!!



*Stroke group, Healty Aging group and Robotics group*