

PhD Candidate Opportunity in Biomedical Engineering Neuroscience and Technology-Assisted Stroke Rehabilitation

Support for the Spanish FPU 2026 Predoctoral Fellowship Application

OCCARE Research Group | EUIT – Universitat Autònoma de Barcelona (UAB)

PhD Supervisor: [Prof. Jennifer Grau-Sánchez](#)

Location: Barcelona, Spain

About the Opportunity

The [OCCARE Research Group](#) (Research Group on Complex Health Diagnoses and Interventions from Occupation and Care), based at EUIT University Center, affiliated with the Universitat Autònoma de Barcelona (UAB), is seeking a highly motivated prospective PhD candidate with a background in biomedical engineering, neuroscience, biotechnology, data science, or related disciplines.

The selected candidate will receive support to apply for the [Spanish FPU 2026 Predoctoral Fellowship](#), a competitive national programme supporting doctoral research and academic training.

We are particularly interested in candidates who wish to apply biomedical technologies, quantitative methods, and computational approaches to understand and improve recovery after stroke. The successful candidate will contribute to an ongoing, competitively funded research programme investigating innovative approaches to stroke rehabilitation, with opportunities to develop a doctoral research line aligned with their technical expertise.

Research Context

The PhD will be embedded within the research project: “*Enhancing Subacute Stroke Rehabilitation Through an Enriched Environment Incorporating Leisure and Music Activities*” funded by the Spanish Ministry of Science and Innovation. The project investigates whether **enriched rehabilitation environments** combining meaningful leisure activities, music-supported therapy, and increased opportunities for engagement can enhance recovery following stroke. The ongoing randomized controlled trial examines functional, motor, cognitive, emotional, and psychosocial outcomes.

Beyond evaluating clinical effectiveness, the research programme seeks to understand the **mechanisms underlying individual differences in recovery** and identify factors that may help predict and optimize rehabilitation outcomes. This provides an opportunity to bridge clinical neuroscience, biomedical engineering, rehabilitation sciences, and emerging technologies.



Potential PhD Research Lines

The final PhD project will be **co-designed with the candidate**, taking into account their academic background, technical expertise, research interests, available resources, and alignment with the broader research programme. Potential areas include:

1. **Neuroimaging and Biomarkers of Brain Plasticity:** Exploring neural mechanisms underlying stroke recovery and rehabilitation-induced neuroplasticity, using neuroimaging and quantitative biomarkers. Potential topics include brain structural and functional measures, brain reserve, cognitive reserve, and their relationships with rehabilitation outcomes.
1. **Biomedical Signal Processing and Quantitative Movement Analysis:** Applying quantitative methods to characterize motor impairments and recovery following stroke. Depending on the candidate's expertise and available infrastructure, this may involve wearable sensors, movement analysis, kinematic measures, or physiological signal processing.
2. **Computational Modelling and Prediction of Stroke Recovery:** Investigating individual variability in recovery through statistical modelling, multimodal data integration, and machine learning approaches, with the aim of identifying factors associated with different rehabilitation trajectories and treatment responses.
3. **Digital Technologies and Technology-Assisted Neurorehabilitation:** Exploring how digital tools and emerging technologies can support rehabilitation assessment, monitoring, or delivery. Research may focus on technology-based measures of activity and participation, personalized rehabilitation approaches, or innovative solutions to support engagement in rehabilitation.

Candidate Requirements

Essential requirements

- **Compliance with the eligibility criteria** of the [Spanish FPU 2026 fellowship call](#).
- Bachelor's and Master's level training (or equivalent qualifications granting access to doctoral studies) in Biomedical Engineering, Bioengineering, Neuroscience, Biotechnology, Biomedical Sciences, Data Science, Computer Science, or a related discipline.
- **Excellent academic record**, particularly important given the competitive nature of the FPU fellowship.
- Strong interest in neuroscience, neuroplasticity, stroke recovery, and translational biomedical research.
- Good command of written and spoken English.
- Motivation to develop an independent research career and work within an interdisciplinary team.

Desirable skills and experience

Experience in one or more of the following areas will be considered an advantage:

- Programming and data analysis: Python, MATLAB, R, or similar environments.
- Neuroimaging: MRI, functional MRI, diffusion imaging, or related analysis methods.
- Biomedical signal processing: analysis of physiological, neural, or movement-related signals.



- Quantitative movement analysis: wearable sensors, accelerometry, motion capture, or biomechanical assessment.
- Advanced statistics and computational methods: predictive modelling, machine learning, or multimodal data analysis.
- Previous research experience, including a Master's thesis or participation in biomedical research projects.
- Interest in interdisciplinary collaboration and clinical translation.

Previous experience in stroke rehabilitation is not required. Candidates with strong technical or biomedical backgrounds who are interested in applying their knowledge to clinically meaningful research questions are particularly encouraged to apply.

What We Offer

- Full support for the FPU 2026 application, including preparation of the research proposal and alignment with the fellowship evaluation criteria.
- An opportunity to develop a doctoral project at the intersection of neuroscience, biomedical technologies, and clinical rehabilitation.
- Integration into an established and competitively funded clinical research programme.
- Access to an interdisciplinary research environment and clinical collaborations with stroke rehabilitation services.
- Opportunities to contribute to research on neuroplasticity, rehabilitation outcomes, and personalized approaches to stroke recovery.
- Academic mentoring, methodological training, and opportunities for scientific publications.
- Opportunities for collaboration with national and international researchers and institutions.
- A supportive research environment that values scientific rigor, collaboration, innovation, and societal impact.

Research Environment

The OCCARE Research Group brings together expertise in neuroscience, occupational therapy, rehabilitation, psychology, physiotherapy, medicine, and health sciences. Our research focuses on understanding and improving recovery and health outcomes through complex interventions, translational research, and innovative rehabilitation approaches.

We combine clinical research with interdisciplinary collaborations to advance the understanding of brain plasticity and develop more effective, personalized, and meaningful rehabilitation strategies.

The PhD candidate will have the opportunity to work in an environment connecting fundamental questions about brain recovery with real-world clinical challenges.

How to Apply

Interested candidates are invited to send their **CV** and a **motivation letter** to **Prof. Jennifer Grau-Sánchez** (jennifergrau@euit.fdsll.cat) before **6 November 2026**, using the subject line: "PhD National Scholarship Application".

The selection process and interviews will take place between 27 October and 10 November, with shortlisted candidates contacted on a rolling basis.

The PhD position is strictly conditional upon the successful award of the FPU scholarship. Candidates selected through this call will be supported in the application process. Enrolment to the PhD programme will only proceed if the scholarship is obtained and is subject to final evaluation by the funding agency.