Advancing Functional Assessment and Personalized Training Protocols for Older Adults: AMI's Role in the COMFORTage Project

About AMI and Our Mission

AMI, based in Romania, is a specialized company dedicated to developing, testing, and optimizing physiotherapy protocols aimed at improving quality of life and functional capacity, especially for older adults and people at risk of neurodegenerative conditions such as dementia.
At the heart of AMI's philosophy lies a commitment to evidence-based movement science, early intervention, and the personalization of care through continuous evaluation and technological integration.

Through our participation in the COMFORTage project, we aim to bring a functional and physical health perspective into dementia research and prevention — emphasizing the body as a key component of health.
Our work centers around three main axes:

1. Collection of detailed functional and movement data from older adults, including those with early signs of cognitive decline.
2. Evaluation of different interventions, comparing traditional strength training with strength training combined with TENS (Transcutaneous Electrical Nerve Stimulation).
3. Contribution of anonymized, structured data to support the creation of predictive models and personalized protocols for prevention, rehabilitation, and clinical decision-making.

Rationale: The Role of Movement in Dementia Prevention

While cognitive screening and biomarker research are central pillars of dementia research, physical function is a powerful and often underutilized predictor of cognitive decline and quality of life in older adults.
Subtle impairments in balance, gait, and dexterity can often precede or mirror neurocognitive symptoms, making them critical indicators for early intervention.

At AMI, we recognize that improving physical function is both a goal and a tool — it enhances daily living, reduces fall risk, and contributes to neuroplasticity and cognitive resilience.
Within COMFORTage, we aim to quantify and validate these relationships in a rigorous, reproducible way.

Functional Assessments in the AMI

To support this vision, AMI conducts a detailed battery of assessments in a controlled lab environment using clinical-grade instruments and validated protocols. Our measurements focus on:

- Postural stability and balance (using force platforms and motion capture tools)
- Gait analysis (stride length, cadence, gait speed, variability)
- Upper limb dexterity (fine motor control tasks, Grooved Pegboard Test)
- Coordination and movement efficiency
- Functional mobility (sit-to-stand tests, timed up-and-go, 360 turn test, etc.)

These assessments are conducted pre- and post-intervention, allowing us to evaluate both the baseline risk profile of participants and the effectiveness of various training protocols over time.

All data is processed, anonymized, and structured for inclusion in the COMFORTage knowledge base, supporting cross-institutional AI model development and long-term outcome tracking.

Intervention Studies: Comparing Modalities for Maximum Impact

In collaboration with other COMFORTage partners, AMI is comparing different modalities of training:

- Strength Training Alone: Traditional resistance exercises targeting major muscle groups (Hip Flexors & Plantar Flexors) , focusing on progressive overload and neuromuscular control.
- Strength Training + TENS: The same resistance exercises combined with surface electrical stimulation to potentially enhance muscle recruitment, proprioception, and neuroplasticity.
- Control Group: Participants who maintain their regular activities without additional exercise interventions, used to assess natural progression and differentiate training effects.

These interventions are delivered over a multi-week period, with ongoing monitoring and feedback. Our goal is to determine which approach delivers the most meaningful improvements in balance, coordination, and gait, key risk factors for functional decline and cognitive deterioration.

By integrating clinical results with participant feedback and physiological data, AMI is working toward the definition of optimized, personalized intervention protocols tailored to individual functional baselines and cognitive risk profiles.

Broader Goals: Data-Driven Personalization and Open Collaboration

Through our contributions to COMFORTage, AMI is helping shape a future where preventive protocols are not generic, but individualized and evidence-informed.
We envision tools that can guide clinicians, patients, and researchers in making the most effective choices based on real-world functional data.

Our long-term objectives include:

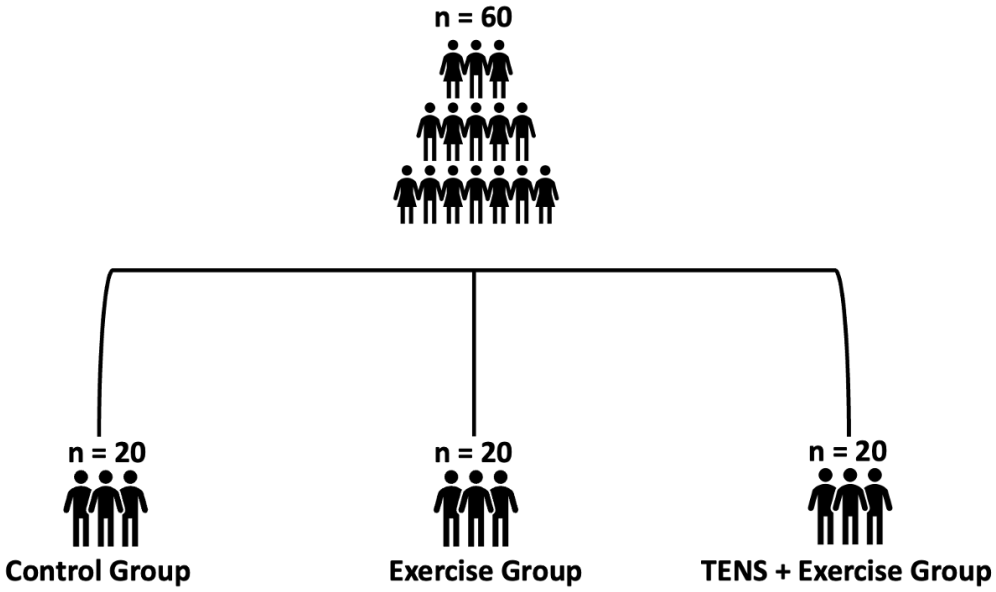
- Supporting the development of a decision-support tool that integrates physical assessment data with cognitive and clinical metrics
- Contributing to the establishment of dynamic prognostic models for functional and cognitive decline
- Promoting the digital transformation of our data, with remote monitoring and AI-assisted intervention planning
- Sharing findings through open-access resources that allow other institutions and healthcare professionals to build upon our results

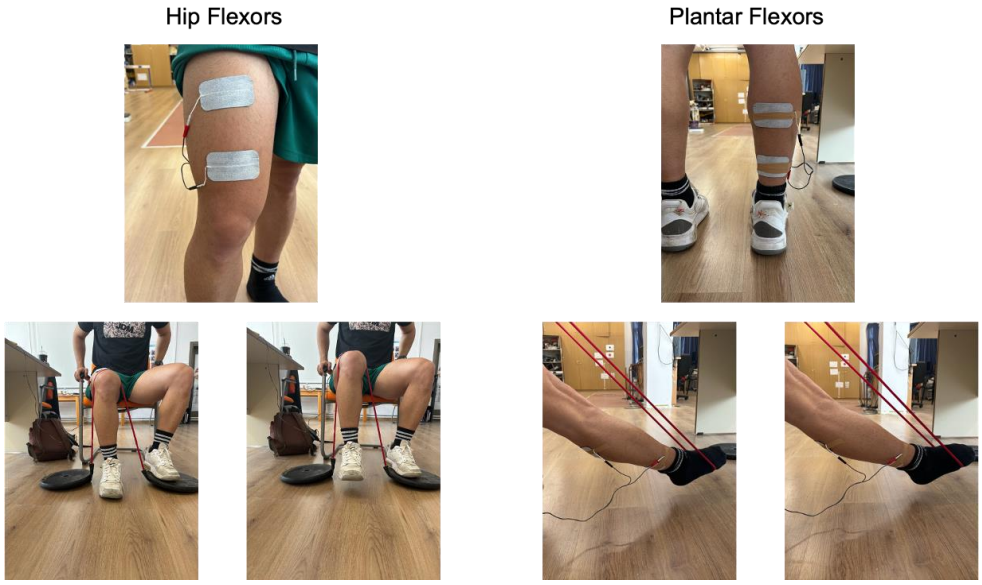
AMI's Contribution to a Collaborative Vision

AMI is proud to bring its expertise in movement science and functional rehabilitation to the COMFORTage project.
We believe that the intersection of physical and cognitive health is critical to the future of dementia care, and we are committed to advancing research that translates directly into better clinical outcomes, improved independence, and healthier aging.

Our collaboration with COMFORTage partners not only enriches our own methodologies but also strengthens the European-wide effort to develop personalized, preventive, and empowering strategies for one of the most pressing health challenges of our time.

Intervention Overview and Sample Data





Electrode placement for hip flexors and plantar flexors during exercises with elastic bands