ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ
DEMOCRITUS UNIVERSITY OF THRACE

European
Life After Stroke
Forum

9-10 March 2026

STOCKHOLM

Thinking, memory and emotions after stroke: What to expect

H.A.S. sso

SAFE STROKE ALLIANCE FOR EUROPE
21 years against stroke

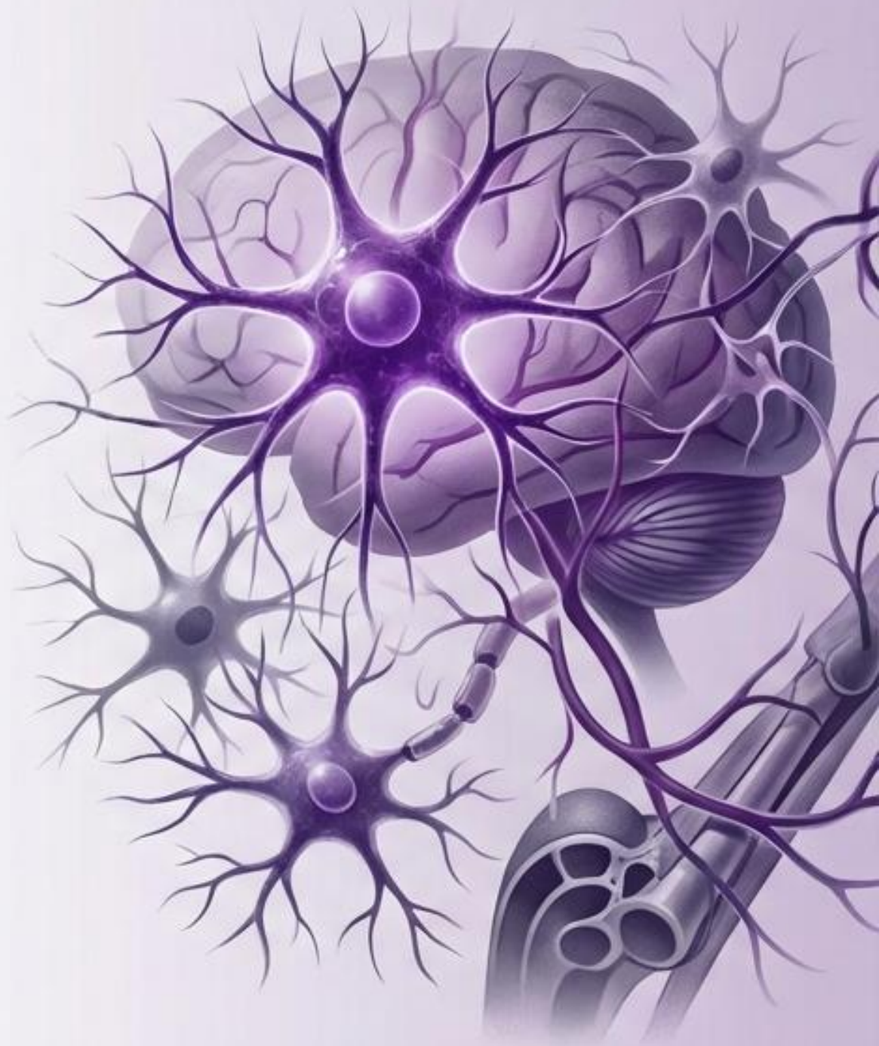
Anna Tsiakiri
Neuropsychologist, Post-doctoral Researcher
Department of Neurology, Democritus University of Thrace

#lifeafterstroke

Disclosure Statement

There are no conflicts of interest to declare.

This work is supported by the project NEURO-BIO-MECH in stroke rehab (MIS 5047286). Implemented under the Action Support for Regional Excellence. Funded by the Operational Program Competitiveness, Entrepreneurship and Innovation (NSRF 2014-2020). Co-financed by Greece and the European Union (European Regional Development Fund).



Ευρωπαϊκή Ένωση
Ευρωπαϊκό Ταμείο Περιφερειακής Ανάπτυξης

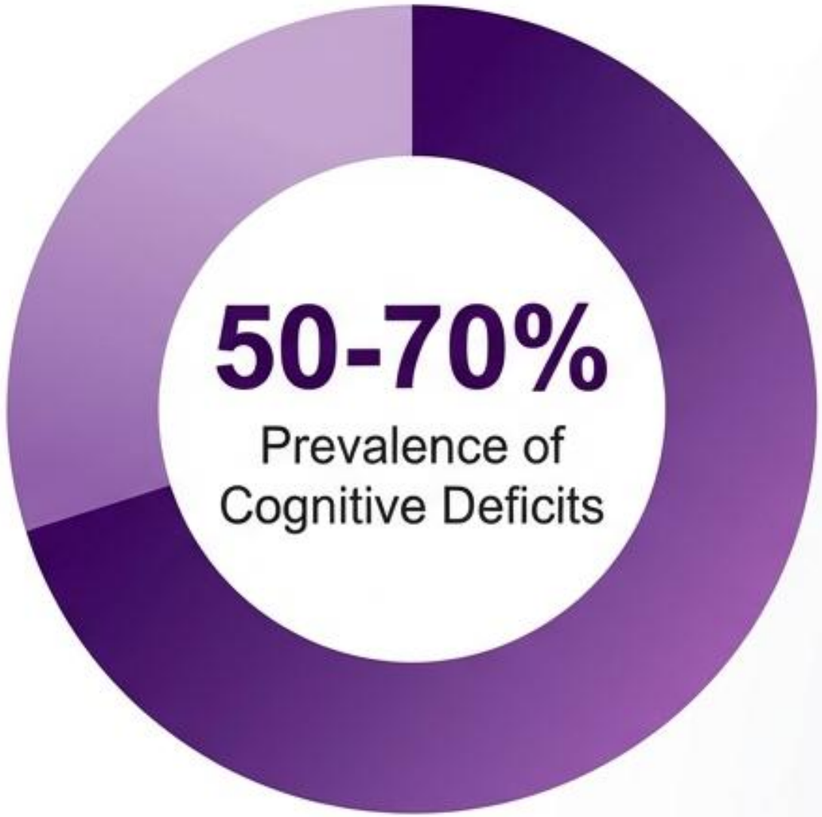
ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΟΙΚΟΝΟΜΙΑΣ & ΑΝΑΠΤΥΞΗΣ
ΕΙΔΙΚΗ ΓΡΑΜΜΑΤΕΙΑ ΕΠΑ & ΤΣ
ΕΙΔΙΚΗ ΥΠΗΡΕΣΙΑ ΔΙΑΧΕΙΡΙΣΗΣ ΕΠΑνΕΚ

ΕΠΑνΕΚ 2014-2020
ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ
ΑΝΤΑΓΩΝΙΣΤΙΚΟΤΗΤΑ
ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ
ΚΑΙΝΟΤΟΜΙΑ

ΕΣΠΑ 2014-2020
ανάπτυξη - εργασία - αλληλεγγύη

Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης

The Invisible Burden of Stroke



- **50% to 70%** prevalence of cognitive deficits in stroke survivors.
- **90%** of patients show difficulties in the acute phase.
- **30%** retain deficits at 3 months; up to **42%** at 5 years.
- Key areas affected: Executive function, Memory, Attention, Processing Speed.
- Frequently undiagnosed in patients with good physical recovery.

Predictive Markers of Post-Stroke Recovery (2024)

Acute Phase (Baseline)
Arial Regular

6 Months Post-Stroke
Arial Regular

Objective: Develop a standardized model to forecast outcomes.
Methodology: Longitudinal study of Ischemic Stroke (IS) patients.
Goal: Moving from general statistics to personalized patient prediction.

Study: Predictive Markers of Post-Stroke Cognitive Recovery and Depression (Tsiakiri et al.)

Methodology and Assessment Tools

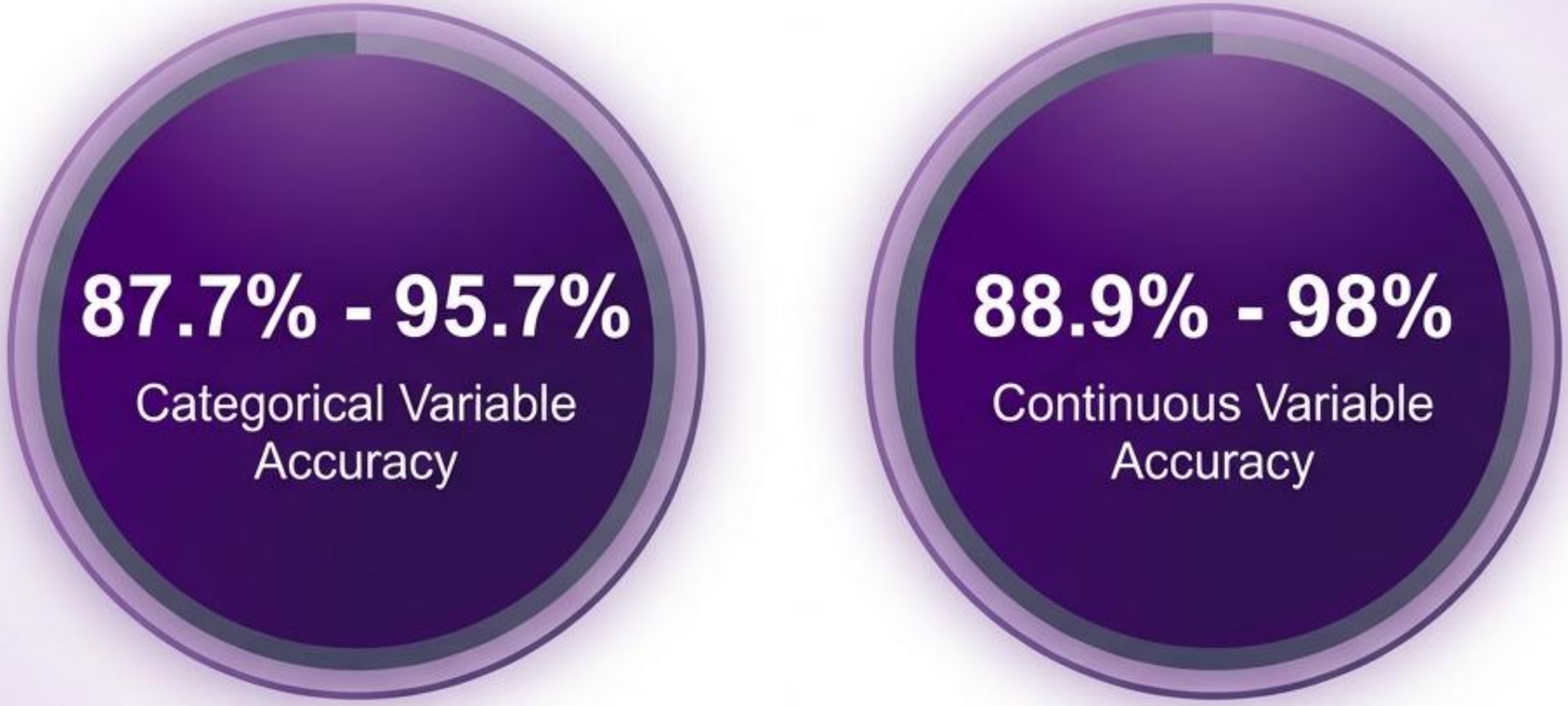
Cognitive Screening:
Montreal Cognitive Assessment (MoCA)
Mini-Mental State Examination (MMSE)

Detailed Neuropsychology:
Addenbrooke's Cognitive Examination III (ACE-III)
Trail Making Test (TMT)

Functional Status:
Modified Rankin Scale (mRS)
Barthel Index (BI)

Severity Measure:
National Institutes of Health Stroke Scale (NIHSS)

The Power of Prediction



The study established models with high predictive reliability.
Conclusion: We can reliably predict cognitive and emotional outcomes.
Prediction allows for targeted, efficient clinical intervention.

Predictor I: Education and Cognitive Reserve

Education is a consistently strong predictor of recovery.

Higher education correlates with No Impairment on MMSE and MoCA.

Mechanism: Cognitive Reserve.

Educated brains show greater resilience to structural damage.

Adds a protective buffer against post-stroke decline.

Predictor II: Age and Plasticity

Younger age is a primary driver for better recovery scores (ACE-III).

Younger brains demonstrate superior neuroplasticity.

Correlation: Better memory retention and faster processing speeds.

Age remains a critical, unmodifiable determinant of the recovery trajectory.

Predictor III: Functional Status

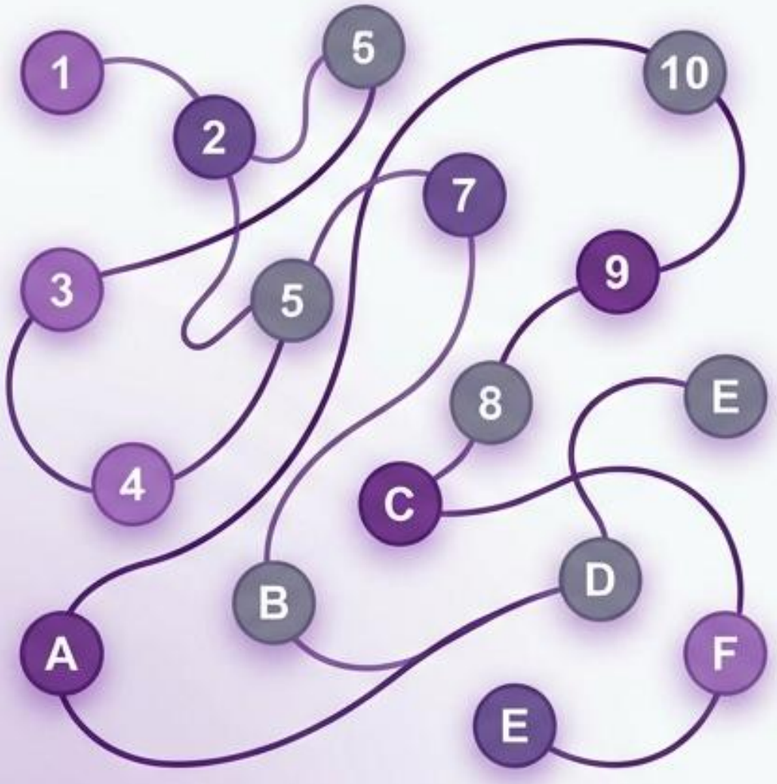
The Body-Mind Connection is statistically significant.

Lower mRS and higher Barthel Index scores predict better cognitive results.

Heavy physical disability load slows cognitive processing.

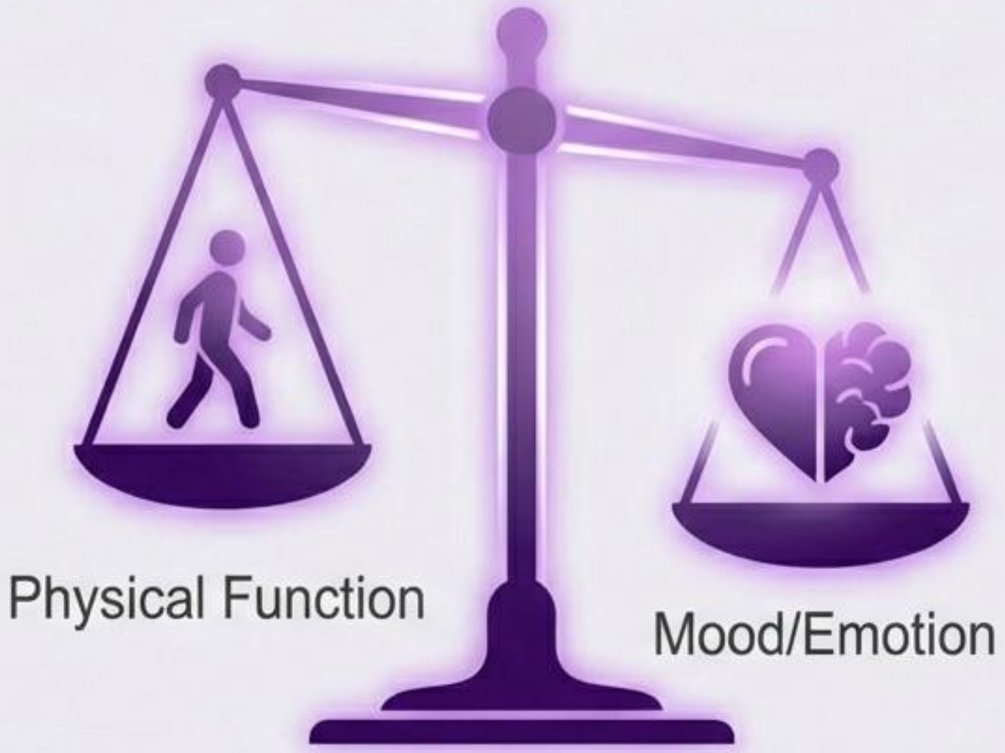
Functional independence is a prerequisite for optimal cognitive testing performance.

Cognitive Specifics: Executive Function



- **Focus**: Processing Speed and Mental Flexibility.
- **Tool:** Trail Making Test (TMT) Parts A and B.
- **Finding:** Performance is heavily influenced by stroke severity (NIHSS).
- MoCA and ACE-III proved sensitive enough to detect mild impairments.
- These tests catch deficits often missed by standard screenings.

The Emotional Aftermath: Depression



- **Focus:** Post-Stroke Depression (PSD) measured by HAM-D.
- **Predictor 1 (Sex):** Male patients showed higher probability of no depression.
- **Predictor 2 (Function):** Higher Barthel Index scores correlate with better mood.
- **Key Takeaway:** Physical independence is crucial for emotional stability.
- Recovery of function often precedes recovery of mood.

Clinical Implications: From Prediction to Prevention

Move from reactive care to **proactive stratification**.

Strategy: Tailor rehabilitation based on markers (Age, Education, Severity).

Requirement: Multidisciplinary collaboration. Neurologists and Neuropsychologists must coordinate early assessments.

Goal: Personalized protocols rather than one size fits all.

Innovation in Rehab: Serious Games

Utilizing gamification to drive neuroplasticity.

- **Benefit:** Provides engaging, high-repetition training.
- **Methods:** Virtual Reality (VR), Telerehab, and Computer Programs.
- **Targets:** Memory, attention, and visuospatial skills.

Bridging the gap between hospital and home.

The MeMo App: Memory Motivation

Memory MeMo Motivation

A specialized tool for **cognitive reinforcement**. Greek version provided by by Democritus University of Thrace (DUTH).

Format: Computerized cognitive training application.

Objective: Improving memory through interactive digital exercises.

Example of **evidence-based tools** entering clinical practice.

The Vision: European Stroke Action Plan 2030

Aligned with ESAP 2030 goals.

Holistic Recovery: Treating the whole person, not just the lesion.

Focus: Life after stroke.

Integrating cognitive and emotional health into standard stroke care.

Ensuring long-term quality of life for survivors.

Conclusion and Takeaways

1. The invisible cognitive burden affects up to **70%** of survivors.
2. We can now predict outcomes with **over 90% accuracy**.
3. **Key Markers**: Education, Age, and Functional Status.
4. Technology (Serious Games/Apps) offers new avenues for treatment.

Final Goal: Early identification leads to **tailored rehab and better living**.

Thank You

FOR YOUR ATTENTION