DYSCALCULIA AND CALCULATION DISORDERS

ASSESSMENT AND REHABILITATION OF MENTAL CALCULATION FOR SPEECH THERAPISTS

Training for speech therapists and professionals in language and mathematical cognition rehabilitation

Master the neurocognitive foundations, assessment tools, and evidence-based rehabilitation techniques for calculation disorders

Duration : 4 hours	**Modules :** 4 modules
Lessons : 16 lessons	**Audience :** Speech therapists and cognitive rehabilitation professionals
Format : 100% online, asynchronous	**Provider :** N° 11757351875
Certification : Qualiopi	**Price :** On request

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Course description

This 4-hour training enables speech therapists and professionals in language and mathematical cognition rehabilitation to understand the neurocognitive foundations of mental calculation and its disorders. Participants will learn to identify developmental or acquired dyscalculia in children, adolescents, and adults, and to construct appropriate and progressive rehabilitation protocols. The training covers standardized assessment tools, rehabilitation principles derived from cognitive neuroscience, and specific adaptations according to age and underlying pathology. At the end of the training, each participant will have a solid theoretical framework, clear assessment tools, and a toolkit of rehabilitation techniques that can be directly applied in sessions.

Module summary

MODULE 1	Understanding mental calculation and its disorders — neurocognitive foundations	4 lessons
MODULE 2	Evaluate — assessment of mental calculation and numerical skills	4 lessons
MODULE 3	Re-educate — protocols and techniques derived from neuroscience	4 lessons
MODULE 4	Tools, resources, and daily clinical practice	4 lessons

Learning objectives

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- Understand the neurocognitive foundations of mental calculation and the brain mechanisms involved
- Identify and differentiate developmental dyscalculia and acquired calculation disorders across all ages
- Conduct a structured assessment using standardized tools and clinical observation
- Interpret assessment results and build a precise profile of numerical difficulties
- Design and implement evidence-based rehabilitation protocols adapted to each profile
- Select and use appropriate digital tools and materials for calculation rehabilitation
- Coordinate with families, schools, and other professionals for comprehensive patient support

General information

Duration	4 hours
Target audience	Speech therapists, speech-language pathologists, cognitive rehabilitation professionals, psychologists specializing in mathematical cognition
Prerequisites	No prerequisites, training accessible to all adult professionals
Price	On quote – VAT not applicable (article 261-4-4° du CGI)

Certification	Qualiopi – Certificate of completion
Training organization	DYNSEO – Activity registration number: 11757351875

MODULE 1 — Understanding mental calculation and its disorders — neurocognitive foundations

4 lessons

Lesson 1 – The neurocognitive foundations of mental calculation

- The sense of number and the mental number line: innate skills documented from birth
- The three codes of number according to Dehaene's triple code model: verbal, Arabic, analogical
- The brain regions involved in calculation: intraparietal sulcus, angular gyrus, prefrontal cortex
- The role of working memory, attention, and executive functions in mental calculation

Lesson 2 – Developmental Dyscalculia — Definition and Profiles

- The current diagnostic criteria: ICD-11, DSM-5, research criteria
- The estimated prevalence and common comorbidities: ADHD, dyslexia, language disorders
- The subtypes of dyscalculia: number sense disorder, procedural disorder, memory retrieval disorder
- The early signs in cycle 1, the warning signs in cycle 2 and cycle 3

Lesson 3 – Acquired calculation disorders in adults

- Post-stroke acalculia: profiles according to lesion location, expected recovery
- Calculating disorders in neurodegenerative diseases: Alzheimer's, frontotemporal dementias
- Calculating disorders in traumatic brain injuries: executive functions, working memory, attention
- Normal cognitive aging and its effects on mental calculation

Lesson 4 – Differential diagnosis and comorbidities

- Distinguishing true dyscalculia and learning delay: criteria and duration of observation
- Dyscalculia and ADHD: impact of attention disorders on calculation performance
- Dyscalculia and math anxiety: when fear inhibits genuinely present skills
- Dyscalculia and language disorder: the impact of number naming and verbal memory

MODULE 2 — Evaluate — assessment of mental calculation and numerical skills

4 lessons

Lesson 1 – The initial assessment — anamnesis and clinical observation

- The interview with the patient and the family: educational history, complaint, family and medical context
- The free observation tests: how the patient approaches a calculation task
- The clinical signs to observe: counting on fingers, subvocalization, typical errors
- The complaint profile in adults: discomfort in daily life, professional impact, avoidance

Lesson 2 – Standardized tests — overview and choices

- The TEDI-MATH and TEDI-MATH Grands: assessment of numerical skills from ages 4 to 15
- The ZAREKI-R battery: assessment of calculation and number processing in children
- The ECPN and EDA: complementary tests to refine the profile
- Tools for adults: neuropsychological batteries including calculation, clinical adaptations

Lesson 3 – Interpret the results and build a profile

- Analyze the gaps between subtests: identify preserved and deficient skills
- The role of the standard deviation in interpretation: gray area, pathological zone, clinical significance
- Cross-reference results with clinical observations: when the test does not tell the whole story
- Write a rehabilitation-focused assessment report: structuring and key elements

Lesson 4 – Communicate the diagnosis to the patient and the family

- Explain dyscalculia in simple words: useful pedagogical analogies
- Announce an acquired disorder in adults: precautions, emotional support
- Set realistic rehabilitation goals with the patient and the family
- Coordinate with other professionals: teachers, doctor, neuropsychologist

MODULE 3 — Re-educate — protocols and techniques derived from neuroscience

4 lessons

Lesson 1 – The general principles of mental calculation rehabilitation

- Start from the meaning of the number before the procedure: never skip the analog representation
- The developmental progression: respect the stages even with an adult

- Automation as a goal: free up working memory for complex tasks
- Transfer to daily life: always anchor rehabilitation in functional contexts

Lesson 2 – Re-educating the sense of number and the number line

- Comparison activities, estimation, placement on a number line
- Manipulable materials: tokens, rods, boxes of ten — their relevance according to age
- Specialized software: The Number Race, L'Attrape-Nombres, current digital tools
- Adapting these activities for adults: age-appropriate materials, ecological situational context

Lesson 3 – Re-educating digital facts and calculation procedures

- Automating addition and subtraction up to 20: multimodal memorization techniques
- Multiplication tables: why pure memorization often fails, how to circumvent it
- Thoughtful calculation strategies: decomposition, rounding to the nearest ten, using doubles
- Rehabilitation of written calculation as support for mental calculation and vice versa

Lesson 4 – Adapt rehabilitation according to the profile and age

- Rehabilitation in primary school children: playful sessions, connection with school, homework
- Rehabilitation in adolescents: taking into account demotivation and school dropout
- Rehabilitation in post-stroke adults: recovery protocol, use of compensatory tools
- Rehabilitation in patients with neurodegenerative diseases: goals of maintenance rather than progression

MODULE 4 — Tools, resources, and daily clinical practice — 4 lessons

Lesson 1 – Digital tools and applications for rehabilitation

- Overview of scientifically validated applications for calculation rehabilitation
- Tools to integrate in sessions and at-home work: selection criteria
- Tele-rehabilitation: specifics of mental calculation in video, adapted tools
- Tracking patient progress with tracking tools: motivation and objectification

Lesson 2 – Building a typical session for mental calculation rehabilitation

- The structure of a 30 or 45-minute session: warm-up, main objective, consolidation
- Vary the materials within the same session to maintain attention and promote transfer
- Adjust the difficulty in real-time: zone of proximal development, avoid repeated failure
- End-of-session tools: assessment, homework, motivation for the next session

Lesson 3 – Working with the school, the family, and other professionals

- Draft recommendations for the school: concrete and realistic pedagogical adaptations
- Involve parents without turning them into therapists: a balance to be found
- Coordination with the doctor, neuropsychologist, and designated teacher
- Long-term follow-up: frequency of assessments, criteria for stopping rehabilitation

Lesson 4 – Clinical cases and summary

- Case study 1: CE2 child with severe developmental dyscalculia — assessment and therapeutic plan
- Case study 2: adolescent with dyscalculia and ADHD — adaptation of rehabilitation
- Case study 3: post-stroke adult with acalculia — recovery protocol
- Personal action plan: integrate these tools into practice within the next 30 days

Teaching methods

- 100% online training accessible 24/7 from any device
- Video lessons, interactive activities, and downloadable resources
- Real clinical case studies with detailed analysis and therapeutic plans
- Certificate of completion issued at the end of training
- Access to a resource library: assessment grids, session templates, practical tools
- Ongoing technical and pedagogical support throughout the training