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A1 - BLOCK 2

Training Toolkit

**ID-GAMING: DEVELOPMENT OF A TRAINING
PROGRAM FOR THE IMPROVEMENT OF
QUALITY OF LIFE OF PERSONS WITH
INTELLECTUAL DISABILITIES THROUGH
“SERIOUS GAMES”**



TOPIC 2

Impact of cognitive training in QoL

Supports Version



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1. Cognitive functions: what are they useful for?

2. Cognitive training

3. Cognitive training and Quality of Life



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Cognitive functions: what are they useful for?

*How do we use cognitive
functions in daily life.*



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Cognitive functions



Cognitive functions are the **mental processes** that allow us to receive, select, store, transform, develop, and recover information coming from external environment.



We are constantly using our cognitive functions for daily activities.



This process allows us to understand and to relate to the world more effectively.



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Cognitive functions in intellectual disabilities

Cognitive functions in people with ID may be expressed differently from their peers, and each individual presents unique patterns and characteristics.

As a general overview:

Memory: people may have difficulties in working memory (using information when undergoing a task), short-term and long-term memory (retrieving memories and information)

Attention: many individuals may have difficulties to keep focus on a task, especially for long periods of time. They can be easily distracted by external (sounds, lights, people) or internal stimuli (hunger, cold, heat, pain).



Cognitive functions in intellectual disabilities

Language: people may have difficulties in understanding, processing and producing oral or written language, ranging from minor challenges to non-verbal individuals. Complex and metaphorical language is especially challenging.

Calculus and problem-solving: impairments may be shown in understanding and managing numbers, mainly in calculations. Problem solving may be also affected, with the impact of low resilience or impatience which may cause frustration and impossibility to complete a task.

Spatial orientation: visuospatial ability may be impaired by motor disabilities, sensory overload or problems, but could be also influenced by other executive brain functions.

Social and emotional skills: they may be impacted by communication difficulties, problems in understanding social situations and disruptive behaviour.



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Cognitive functions addressed

- Memory and attention to detail
- Calculus and problem-solving
- Language
- Spatial orientation
- Social and emotional skills



Why are those useful?



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Language

It allows us to communicate with others. It can be:

- **Informative:** communicates an information
- **Expressive:** reports or evokes feelings and attitudes
- **Directive:** aims to cause or prevent an action



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Calculus

It has a wide use in different academic fields (engineering, economics, etc.). In everyday peoples' lives, this becomes very important when they have to accomplish tasks that involve **numbers** and **calculations**.

Some examples:

- Managing money and buying goods
- Cooking (counting and measuring ingredients)
- Planning and organizing (how much time do I need to...?)

...And many more!



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Problem Solving

It allows us to search and find effective solutions to problems that arise.

Personal and business environments may present aspects that are not operating in the way they are desired to work. Problem-solving gives us a mechanism for **identifying** them, figuring out the **cause** and determining a **course of action** to fix them.

Areas where problem-solving is useful:

- Planning and organization
- Communication and active listening
- Creativity
- Research and analysis



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Memory

It allows us to **acquire, store, retain** and **retrieve** information and procedures.

We use it in different daily activities, for example:

- Remembering names, places, actions
- Recalling items to purchase at the grocery store
- Remember to take medications
- Remember a procedure or a sequence of actions in order to complete a task (also automatic processes)
- Remember facts, directions, plans



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Attention

It's like a funnel that make people **select** and **take in** useful information from the external world.

It allows us to tune out unimportant details and focus on what matters.

In this way, we can create memories.

We can avoid distractions and focus energies in order to complete a task.



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Spatial Orientation

It allows us to adapt to new environments and getting from one point to another.

It is important to **locate objects** and successfully **navigate through them in their environments**, physically and mentally organize objects in their world.

It gives us the skill to maintain orientation in a variety of circumstances, for example:

- When walking to work
- When riding a bike
- When exploring a city
- When moving in a big building



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Social and Emotional Skills

They are important to **communicate**, **relate to**, and connect with other people. They help us **manage our emotions**, build healthy relationships, and feel empathy.

It allows us to establish friendships, and good personal relations.

It helps also to better adapt to the environment and accomplish tasks more effectively.

This increases occupational status, health and general wellbeing.



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Cognitive training

Benefits of the work on cognitive functions.



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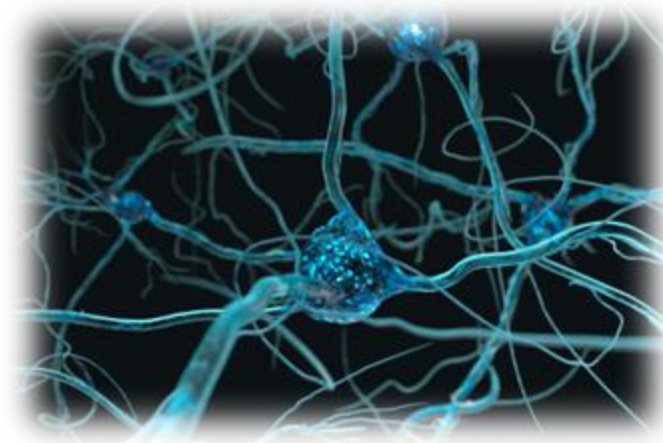


Training cognitive functions

Cognitive training in people with ID has shown positive impact in different cognitive functions, such as working memory, visuospatial ability and language (Söderqvist et al., 2012).

Why?

Our brain presents a very important feature: **neuroplasticity**. This means that neurons and connections can be modified according to the context demands. By growing new neural networks and speeding up important connections, a mental training program can measurably and sustainably enhance brain activity. It can also trigger the growth of new neurons, even into old age.



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Training cognitive functions

Benefits of cognitive trainings can be seen in different areas of life.



Work: depending on your tasks, you may be required a wide range of skills. People in contact with the public need language, memory and social skills. Working in a shop, a person may need calculus abilities, attention and social skills. People working outdoors, may need spatial orientation.



Study: memory and attention are basic skills, supported by language.



Sport: strategy is favoured by attention, memory and problem solving, while spatial orientation improves performance.



Mental wellbeing: working on neuroplasticity, the brain becomes more resilient and deals more effectively with stress and possible consequences such as anxiety and depression.



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How do we use cognitive functions?

In everyday life...

You have to **take a bus**: this requires good spatial orientation and memory



You have to **meet your friends**: social and emotional skills are required



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How do we use cognitive functions?

You have to **run a meeting**: attention, memory and social skills are important elements for that



You have to **prepare a meal**: memory and attention are required

You have to **go to the store**: you use calculus to count money



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Impact



Improving our cognitive functions therefore helps us to accomplish our daily tasks, giving us access to a wider range of opportunities.



For people with ID, this means big and small achievements which have a direct impact on their Quality of Life.

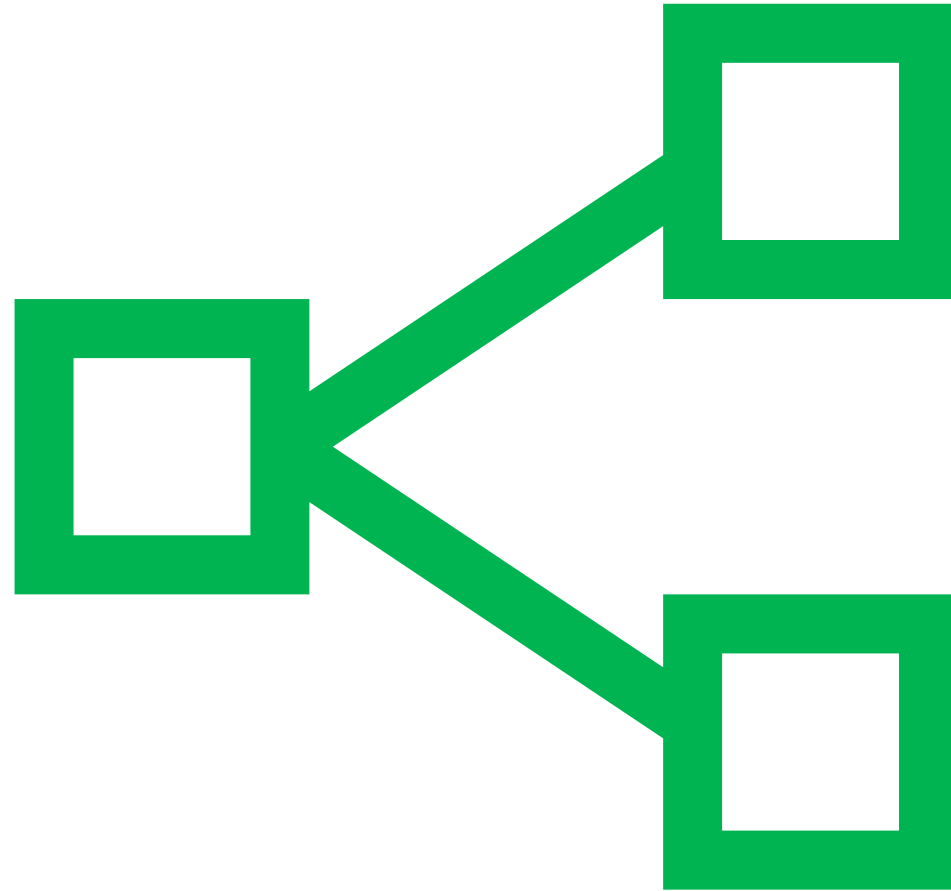


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Cognitive Training and Quality of Life

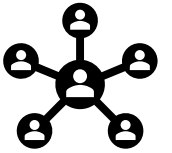
*How working on cognitive
functions can improve
QoL?*



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Cognitive Functions and QoL

Strengthening cognitive functions helps to accomplish tasks, to develop individual resources and to adapt to the context requests.



In this way, you improve also **Quality of Life** dimensions.

Let's see some examples.



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To the doctor

*Spatial
orientation*

I need to go to the doctor. To do this, I know I have to take a bus and then walk.

Among other Cognitive Functions, I need **spatial orientation** to reach my destination.

If accomplishing this tasks, I am working on:

- Self determination
- Physical wellbeing
- Rights



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Cooking

Memory

I want to prepare a healthy dish for lunch.

Among other cognitive functions, I need **memory**, to remember to buy the ingredients, and the steps in the procedure. I may need to remember to check some pots or the oven while it is on.

If I accomplish this task, I am working on:

- Self-determination
- Physical wellbeing



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Out with friends

Language

I have a meeting with my friends during the weekend.

Among other cognitive functions, I use **language** to communicate with others.

If I accomplish this task, I am working on:

- Emotional wellbeing
- Interpersonal relationships
- Social inclusion



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At the store

Calculus

I'm going to the store to buy some items for my house.
Among other cognitive functions, I use **calculus** to check my expenses and pay at the cash.

If I accomplish this task, I work on:

- Self-determination
- Material wellbeing



At home

Problem solving

After a long day, I go back home and I want to take a shower. When I'm there, I realize it is broken. What can I do?

Among other cognitive functions, I use **problem solving** to find a suitable solution to this problem.

If I accomplish this task, I am working on:

- Self-determination
- Physical wellbeing



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At work

Attention to detail

I'm at work and I am asked to learn a new task.

Among other cognitive functions, I need **attention** to keep being focused on learning something new.

If I accomplish this task, I work on:

- Personal development
- Social inclusion



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Birthday party

*Social and
emotional skills*

I am planning a birthday party with the most important people in my life.

Among other cognitive functions, I use **social and emotional skills** to connect with others, building meaningful relationships.

If I accomplish this task, I work on:

- Interpersonal relationships
- Emotional wellbeing



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Resources

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The other deliverables of the ID GAMING project can be found on the project webpage <https://id-gaming-project.eu/>



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