XRHealth

User Guide:
Koji's Quest
VR App for Cognitive Rehabilitation

What is Koji's Quest?

Koji's Quest is a cognitive rehabilitation tool that targets key abilities such as selective attention, inhibition, information processing speed, and short-term memory. The application offers a variety of game-based modules designed to support patients in strengthening these cognitive skills.

Step-by-Step Guide

Login

- Patient will access KojiQuest through the XRHealth portal
- No additional credentials are needed
- On the first login, a tutorial will start - notice to watch it until the end

Game Selection

- To choose the desired game module the patients need to enter the menu tab by selecting the Menu Icon on the top-left
- Choose the Navigation tab and the available games will be shown
- Choose the game and then choose the duration of the game (minimum=3 min, recommended=5 min) - start with the tutorial!
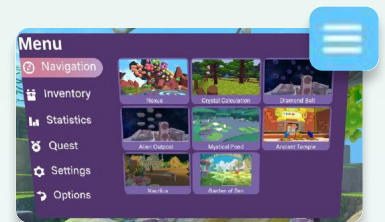
Gamification

- The patient lands on a mysterious planet where they explore various worlds with Koji, a virtual companion dog 🐶
- The landing has zapped the energy from the Tree of Life, the world's main source of energy
- By carrying out tasks, the patient brings energy to the tree, reinvigorates the world and unlocks new, and creative things to do in the world

Exit the App

- To exit the app the patients need to enter the menu, choose the options tab, and click quit game

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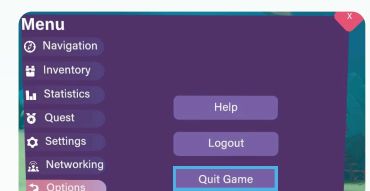
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Game Modules

Diamond Belt (selective attention)

Select the object that matches certain trait(s) of the stimulus presented in the spaceship- train your **selective attention, inhibition, and information processing speed**

- **Phase 1:** Search and select by color
- **Phase 2:** Search and select by shape
- **Phase 3:** Search and select by color & shape

Results: accuracy, reaction times, difficulty level and speed level compared to the previous session
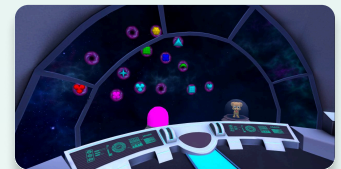
Acalculia (calculation skills)

Train calculation skills with simple and fun mathematical problems - train your **counting, arithmetic, multiplication, and mental representation** of numbers

- **Phase 1: Sequences** - counting up/ counting down/ double
- **Phase 2: Numerical manipulation** - an equation that should be solved by collecting the correct combination of gems out of the environment

Results: accuracy, reaction times and difficulty level comperd to the previous session

Alien outpost (divided attention)

Focus on the middle but pay attention to the sides as well - train your **divided attention, visual attention, multitasking, and information processing speed**

- **Phase 1: Visibility -** in the central spaceship look for the stimuli that are either present or absent
- **Phase 2: Faces -** in the central spaceship look if the stimuli was smiling or frowning
- **Phase 3: Equality** - determine if the 2 stimuli in the central spaceship were same or different

Results: object accuracy, average objective speed, target accuracy, average target speed, difficulty level and speed level compared to the previous session

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Game Modules

Ancient Temple (visuospatial)

Tetris blocks which should be rotated in order to fill in the gaps - train your **visuospatial reasoning, mental rotation, and planning**

- **Phase 1: Block puzzle** - fill gaps that are set and presented from the beginning by selecting and rotating blocks, just like a puzzle
- **Phase 2: Crumbling wall -** gaps are opened over time and the patient needs to fill while new pieces are generated and displayed.

Results: Phase 1: efficacy, puzzles per minute, and difficulty level | **phase 2:** completion and, difficulty level

Mystical Pond (executive functioning)

Feed the fish - train your **multitasking, prioritization, inhibition, and decision-making abilities.**

- **Phase 1: Finding the Right Combinations -** figure out by trial and error, which food belongs to which fish
- **Phase 2: Multiple Fish -** multiple fish will jump out of the water
- **Phase 3: Maintenance -** feed the fish, and fill up the food containers

Results: correctly fed, accuracy, difficulty level, and speed level compared to the previous session

Nautilus (memory)

Memorize objects and their location and recall that information after a certain period of time - train your **long-term memory, short-term memory and working memory**

- **Phase 1: Visual long-term memory** - remembering the color of the shape and the location while going through other phases
- **Phase 2: Visual short-term memory -** remembering the locations of identical pairs of objects within the grid of clams
- **Phase 3: Visual working memory -** reproduce the location-objects pairs

Results: accuracy, and difficulty level compared to the previous session