

## **24-session combined training program**

### **Session 1: executive functions and endurance**

- Situation: two objects with different characteristics (size, shape, color) are placed on each side of a field. The instructor states a characteristic (size, color...), the participant has to reach the opposite object (it inhibits the information from going in the opposite direction of this information). Modes of movement can be varied (fast walking, backward walking, etc.).

### **Session 2: cognitive games and motor stimulations**

- Situation: Trivial Pursuit \_ each color corresponds to a physical and cognitive activity (i.e: balance exercise and verbal fluency, solve a mental calculation that corresponds to the number of repetitions of a physical exercise, motor path and general culture question, etc).

### **Session 3: spatial and long-term memory and motor stimulation**

- Situation 1: The instructor says a series of colors that the participant has to memorize and reproduce by moving on the pellets corresponding to the colors said. Each color corresponds to a physical action (i.e: the red pellet corresponds to three squats)
- Situation 2: same situation except that the instructor gives to the participant a sheet of paper on which is drawn a path to follow.

### **Session 4: executive functions and motor stimulation**

- Situation: Road code \_ The participant moves in the space between imaginary cities where he has to realize a physical task (squat, chair stand, ect.). When he meets a traffic sign in the road, he has to realize the opposite action at the traffic sign (e.g: when he sees a green light, he has to stop and when he meets a red light he has to continue his movement).

### **Session 5: working memory and motor stimulation**

- Situation: the instructor gives a sequence of colors; the participant has to reproduce this sequence by throwing a ball on each color pellet stated. Each color corresponds to a muscle strengthening movement.

### **Session 6: memory and motor stimulation**

- Situation: Illustrations of objects are placed on a table; the objective is to replace these objects in the order of increasing price. The participant has to move only two images at a time and make a motor path between each movement.

### **Session 7: working memory and motor stimulation**

- Situation: Some color pellets are placed in front of the participant. The instructor realizes step movement corresponding to one sequence of color pellets. The objective is to learn a choreographed step movement and reproduce it.

### **Session 8: cognitive games and endurance**

- Situation: Biathlon \_ The participant completes a motor path, arriving at a stand where he has to complete a cognitive exercise (mental calculation, crosswords, puzzle, etc.). If the participant gives the wrong answer, he has to complete a penalty lap, before repeating the motor path and returning to the stand to validate the cognitive exercise.

### **Session 9: episodic memory and circuit training**

- Situation: To memorize the number corresponding to each exercise. Make the circuit and for each number participant meet on the course, perform the corresponding exercise.

#### **Session 10: memory, verbal fluency and motor stimulation**

- Situation 1, orientation: To memorize a compass where each cardinal point is associated with a color. Move to a requested object and point to the object that is in the requested direction (i.e. indicate the object that is north of your position, indicate the object that is located in the red direction from your position).
- Situation 2, balance and fluency verbal: Hold a balance position and give as many words as possible corresponding to a semantic category (e.g: animals, countries).

#### **Session 11: spatial and long-term memory and motor stimulation**

- Situation 1: The instructor says a series of colors that the participant has to memorize and reproduce by moving on the pellets corresponding to the colors said. Each color corresponds to a physical action (i.e. the red pellet corresponds to three squats).
- Situation 2: same situation except that the instructor gives the participant a sheet of paper on which is drawn a path to follow.

#### **Session 12: cognitive game and motor stimulation**

- Situation: Trivial pursuit \_ each color corresponds to a physical and cognitive activity (i.e: balance exercise and verbal fluency, solve a mental calculation that corresponds to the number of repetitions of a physical exercise, motor path and general culture question, ect).

#### **Session 13: cognitive games and endurance**

- Situation: Biathlon \_ The participant completes a motor path, arriving at a stand where he has to complete a cognitive exercise (mental calculation, crosswords, puzzle, etc.). If the participant gives the wrong answer, he has to complete a penalty lap, before repeating the motor path and returning to the stand to validate the cognitive exercise.

#### **Session 14: executive functions and boxing activity**

- Situation: each boxing movement corresponds to a color. The instructor states more or less quickly a succession of colors, and the participant has to execute the movement corresponding to each color.

#### **Session 15: working memory and motor path**

- Situation: The participant memorizes the menu of a restaurant (he chooses a menu with starter, main course and dessert), carries out a motor path and at the end he gives back his menu.

#### **Session 16: executive functions and motor stimulation**

- Situation: Several zones are created in space. Each zone corresponds to a color, a city and a number. The instructor gives oral information (city name, number or color) and the participant has to go to the area corresponding to the information.
- Next situation: same thing except that the participant has to go to the opposite zone.

#### **Session 17: cognition and football**

- The instructor announces a sequence of colors, the participant has to slalom with the soccer ball between the cones according to the colors requested. At the end of the slalom, the participant has to shoot the ball in the cone corresponding to the number requested at the beginning of the course.

#### **Session 18: executive functions, episodic memory and boccia**

- Situation:
  - o Encoding phase: The participant memorizes a sequence of colored symbols (red triangle, yellow square...).
  - o Distraction phase: boccia activity \_ the instructor gives a score to reach and the participant aims at the targets (numbers) allowing to reach the requested score.
  - o Restitution phase: the participant restitutes the sequence of symbols memorized during the encoding phase.

#### **Session 19: episodic memory and motor path**

- Situation: The participant visualizes an image on which appears a number of objects and then performs a motor path. At the end of the course, the participant has to throw a ball on all the objects he remembers to have seen on the starting image.

#### **Session 20: executive functions and motor stimulation**

- Situation 1: Road code\_ The participant moves in the space between imaginary cities where he has to realize a physical task (squat, chair stand, etc.), and when he meets a traffic sign in the road he has to realize the opposite action at the traffic sign (example: when he sees a green light, he has to stop and when he meets a red light he has to continue his movement).
- Situation 2: In this situation, when the participant meets a traffic sign on the road, he has to perform the action corresponding to this traffic sign, but if the instructor gives an auditory signal before the participant meets the traffic sign, he has to perform the action opposite to the traffic sign.

#### **Session 21: semantic memory and Handball**

- Situation: In the handball activity, pins corresponding to decades are placed on the court. The instructor asks a general knowledge question. The participant has to juggle with the ball and shoot the plot corresponding to the year of the answer.

#### **Session 22: working memory and motor path**

- Situation 1: The participant memorizes a series of cards, performs a motor path and then has to put the cards back in the order learned at the beginning.
- Situation 2: Cards are spread face down on a table, the objective is to find the pairs of cards.

#### **Session 23: working memory, verbal fluency and motor path**

- Situation 1: The participant memorizes the travel (he chooses a country, a city, a means of transportation, an activity...), carries out a motor path and at the end he gives back his travel.
- Situation 2: Verbal fluency \_ Hold a balance position and give as many words as possible corresponding to a semantic category (country, city, means of transportation...).

#### **Session 24: working memory and motor path**

- Situation: the instructor asks a question, the participant has to give the answer, remember the answer, complete the course and give back the answer in the form of a throw. Plots with numbers are placed in front of the participant. Using a ring, the participant has to aim at the numbers that form the digits of the answer.