REF **TARGET TRACKING**

$C\epsilon$ Class I Medical Device

User manual

Distribution mode
Available for direct download at
http://virtualisvr.com/espace-client/
Use under licence

VIRTUALIS

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DESCRIPTION

Target Tracking is a software used for the rehabilitation of the cervical spine, an upper limb, balance, hemineglect, ataxias...

INDICATIONS

Rehabilitation of cervical spine amplitude, proprioception and reflexes. Ability to practice balance (notably vestibular disorders). Comprehensive or analytical rehabilitation of an upper limb (orthopedics, rheumatology, neurology). Hemineglect rehabilitation using target tracking.

CONTRAINDICATIONS

Epileptic patients, children under 15 years of age, pregnant women

FOR USE BY

Healthcare professionals: Physiotherapists; Occupational therapists; Neuropsychologists; ENT doctors; Neurologists; PMR doctors (physical medicine and rehabilitation), etc.

Research Centers: CNRS, CHU, INSERM, etc.

WARNINGS AND CAUTIONS

During sessions, stay close to the patient in order to anticipate any loss of balance or discomfort caused by the use of virtual reality.

Define a working area of about 3m² to allow for risk-free movements.

Take a 10 to 15 minute break every 30 minutes of use.

Potential adverse effects are those due to the use of Virtual Reality, namely vomiting, malaise, dizziness, syncope.

The accessories required to use the software may emit radio waves that can interfere with the operation of nearby electronic devices. If you have a pacemaker or other implanted medical device, do not use the product until you have taken advice from your doctor or the manufacturer of your medical device.

⚠️ *Any serious incident should be notified in writing to* qualite@virtualisvr.com

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1. GENERAL

1.1. Advice for use

This type of re-education must be undertaken progressively, especially in Virtual Reality where the stimulation is much more "powerful" than the traditional optokinetic stimulators.

These stimulations have the potential to cause certain disorders: Vasovagal syncope, epileptic seizures, migraines, etc. (Despite a test phase on more than 2000 patients. Similarly to previous generation optokinetics, caution is required)

The contraindications are identical: Mainly epilepsy and migraines.

As postural reactions can be spectacular, it is VERY STRONGLY advised to place patients in a safe environment and to stay close to them throughout the session.

It is also recommended to increase the duration and intensity of the stimulation very gradually, after an initial short session to make sure of patients' tolerance to this type of stimulation.

Virtualis declines any liability for any disorders suffered by patients during or after use of its software.

1.2. Hardware and minimum configuration requirements

Hardware required to use the system:

- VR Ready PC
- VR System: HTC VIVE, HTC VIVE Pro or compatible system
- Lighthouse bases (HTC VIVE tracking)
- HTC VIVE Controller
- XBOX 360 Controllers
- USB HUB

In order to install and use our virtual reality applications, we recommend a configuration equal to or higher than the system requirements:

Technical Minimum Requirements

GPU	CPU
NVIDIA: Gen9 GTX 970 / Gen10 GTX 1060 AMD Radeon: R9 290 / RW 480 / Vega 56	Intel: I5 4590 AMD: FX 8350 / Ryzen 1400

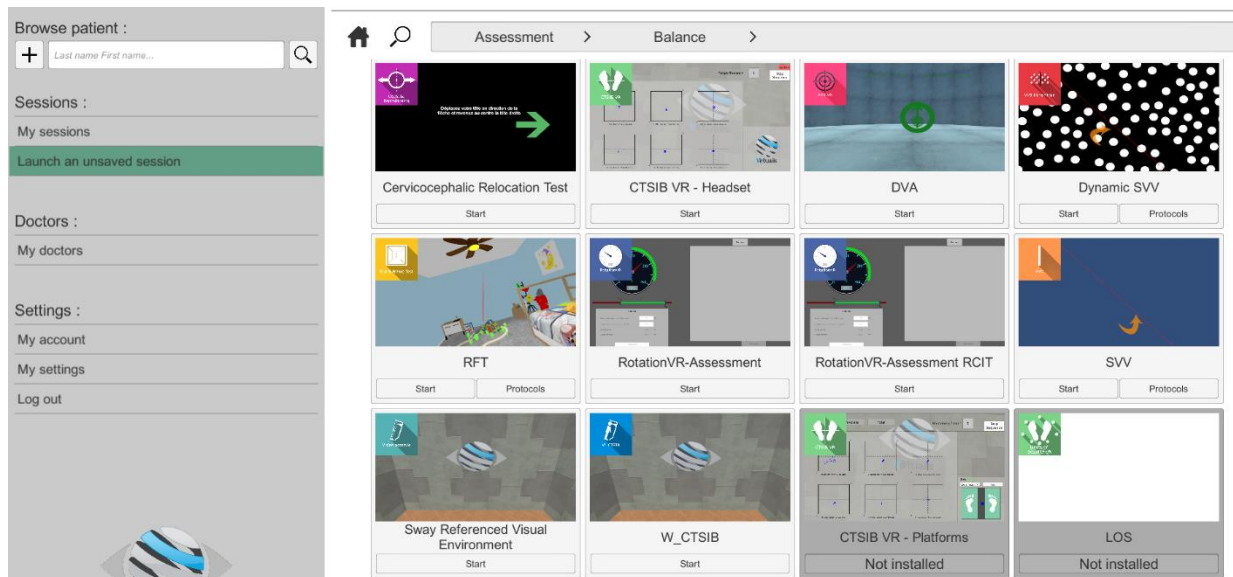| Operating System	RAM
Windows 7 SP1	8 Go

2. USE OF PATIENT MANAGEMENT

Once connected to the Patient Management software, you arrive on the home page. It is from this home page that you will be able to start your VR software as well as the other Patient Management functions.

The software can be grouped according to criteria such as "Assessment" or "Re-education" and then by pathology type: Neurology, Balance, Functional or Travel sickness.
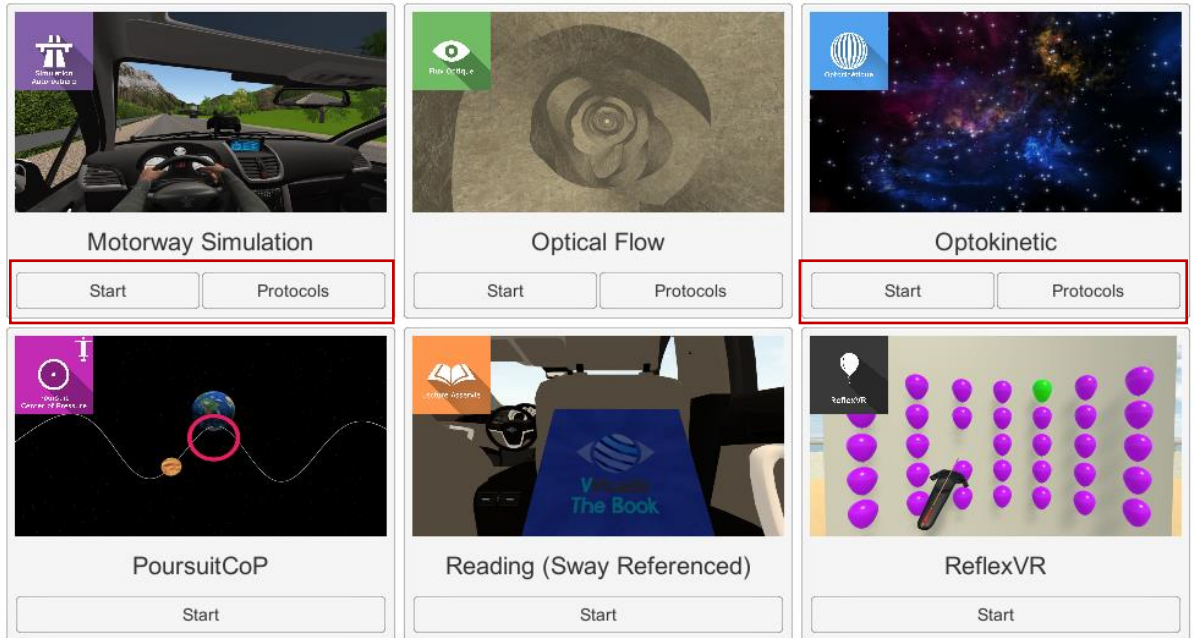
You can start or switch from one software to another from the home page by clicking the corresponding "Start" or "Protocols" button.
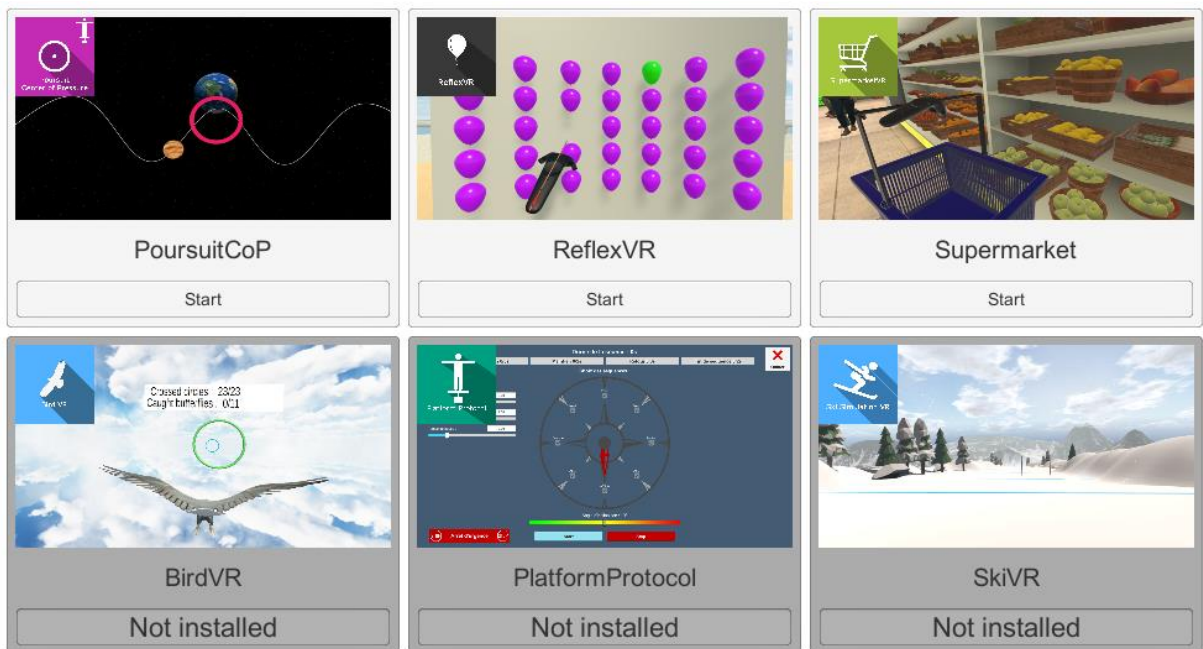

Some software can be started either in *manual mode*, by directly clicking the "Start" button, or in *protocol mode* by clicking the "Protocols" button.

The *manual mode* allows users to choose the settings for each environment. The *protocol mode* offers several sessions with different difficulty levels to test and gradually accustom patients to the VR environment.

Software that is not part of your subscription package is greyed out. If you want to use it, please contact our sales department.
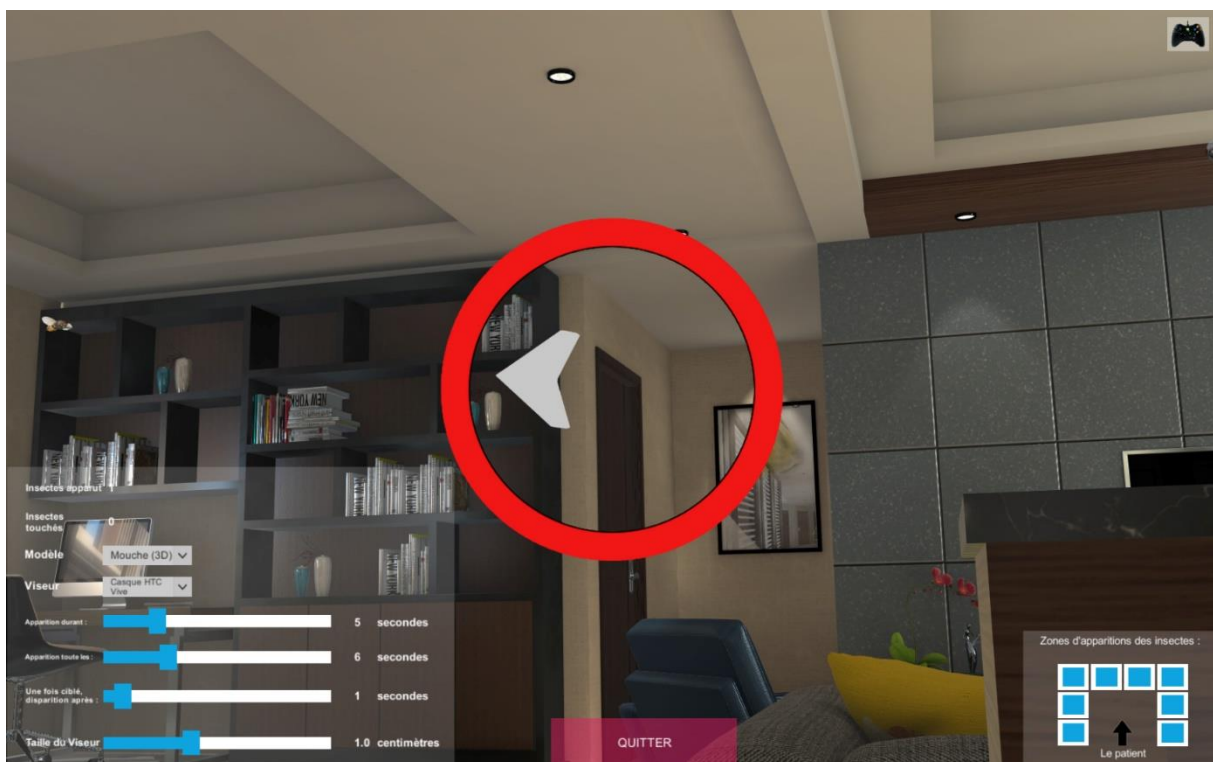
3. TARGET TRACKING

3.1.   Module field of application

In the same way as the "head-eye coordination" module, this module is used to work on the cervical spine by tracking a target. Here, the path is completely random and the targets are insects, making the exercise a little more fun. Patient must keep the target within a viewfinder controlled by the patients' head position or using a hand-held controller.

When the target being tracked is 100% inside the viewfinder, the viewfinder is green. Otherwise, it is red.

3.2.   Installing the patient

Seated, hands clasped behind the back (avoid thoracic/lumbar spine compensation): Work on cervical spine amplitudes
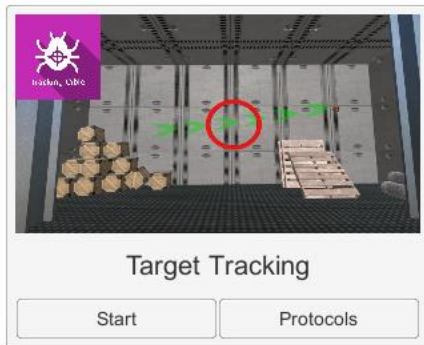
Seated / standing position: With hand-held controller: upper limb work

Standing position: Global balance work

Standing position on a foam block (Balance pad): Specific balance work (vestibulospinal reflex)
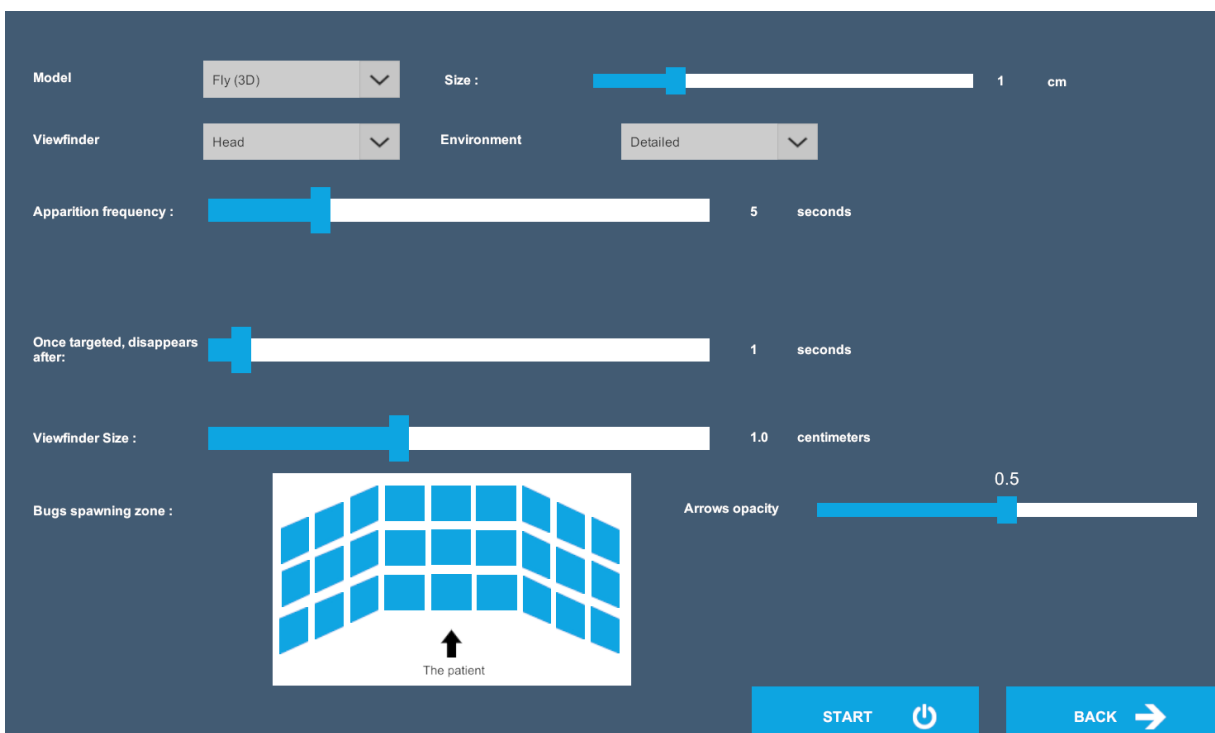
3.3.   Session settings

To start the **Target Tracking** software from Patient Management there are two possibilities: *manual* start or *protocols*.
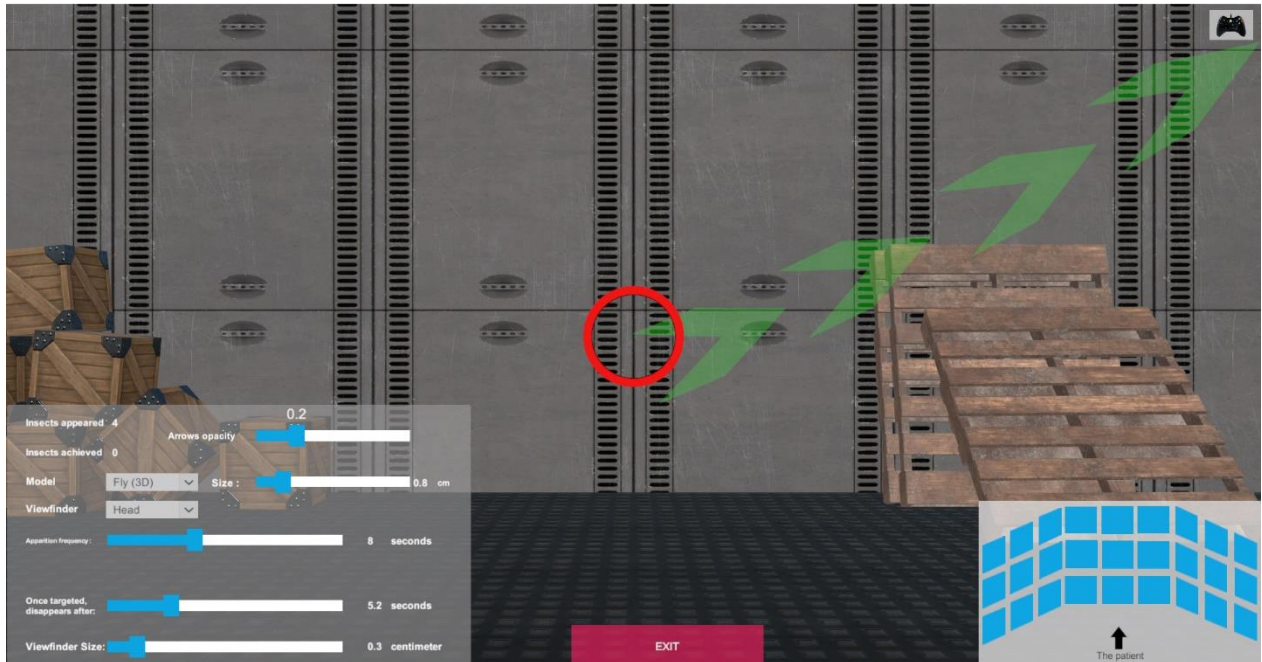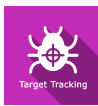
When starting the software in *manual mode*, the opening is made in a launch interface consisting of a set up area, and an action area at the bottom right.

The general Patient Management menu can be accessed from the start interface by simply clicking the "Back" button or by pressing the "escape" key on the keyboard.

The module is launched by simply clicking the "start" button after having configured the environment setting.

Once this button is pressed, the module starts by taking into account the specified settings. You also have the possibility to modify some settings when the module has been launched, using the mouse.

This module includes many customizable settings, namely:

The object model to be tracked

Several target tracking models are available: fly (3D); beetle; bumblebee; cranefly; dragonfly; fly; glow-worm; ladybird; mosquito; moth; robber fly; wasp. The selection is made directly from a drop-down menu.

Tracked object size

The tracked target size can be adjusted directly using the corresponding cursor.

Viewfinder type

Target tracking mode can be carried out in two ways: either by direct tracking using patients' head movements (requires trackers), or using an external controller. The tracking mode is selected from the required entry on the drop-down menu.

Object apparition/disappearance frequency

Object apparition/disappearance frequency is fully configurable by using the mouse to move the corresponding cursors.

Viewfinder size

Similarly, the viewfinder size can be adjusted by directly moving the corresponding cursor. More accuracy is required if the viewfinder is small.
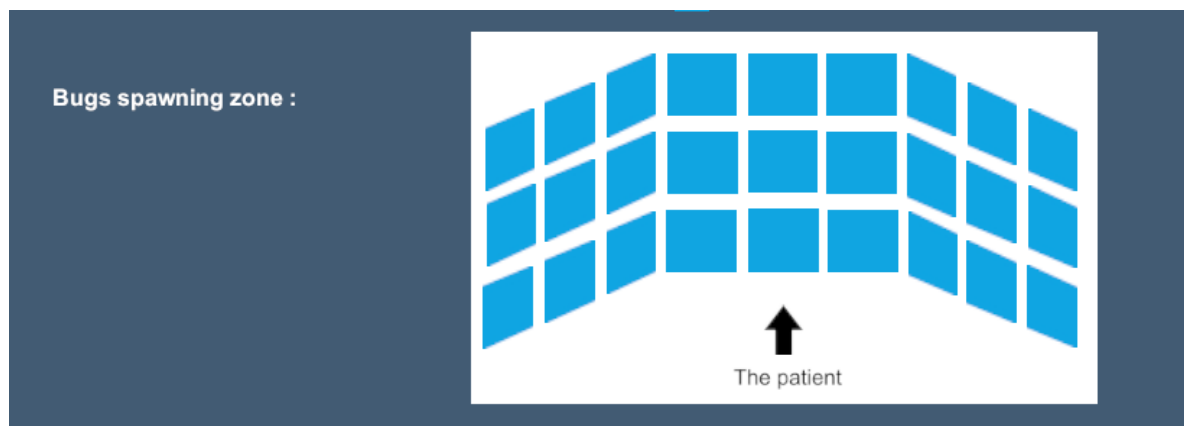
Viewfinder Size :   1.0   centimeters

Arrow opacity

Arrow opacity can be adjusted by acting directly on the corresponding cursor.
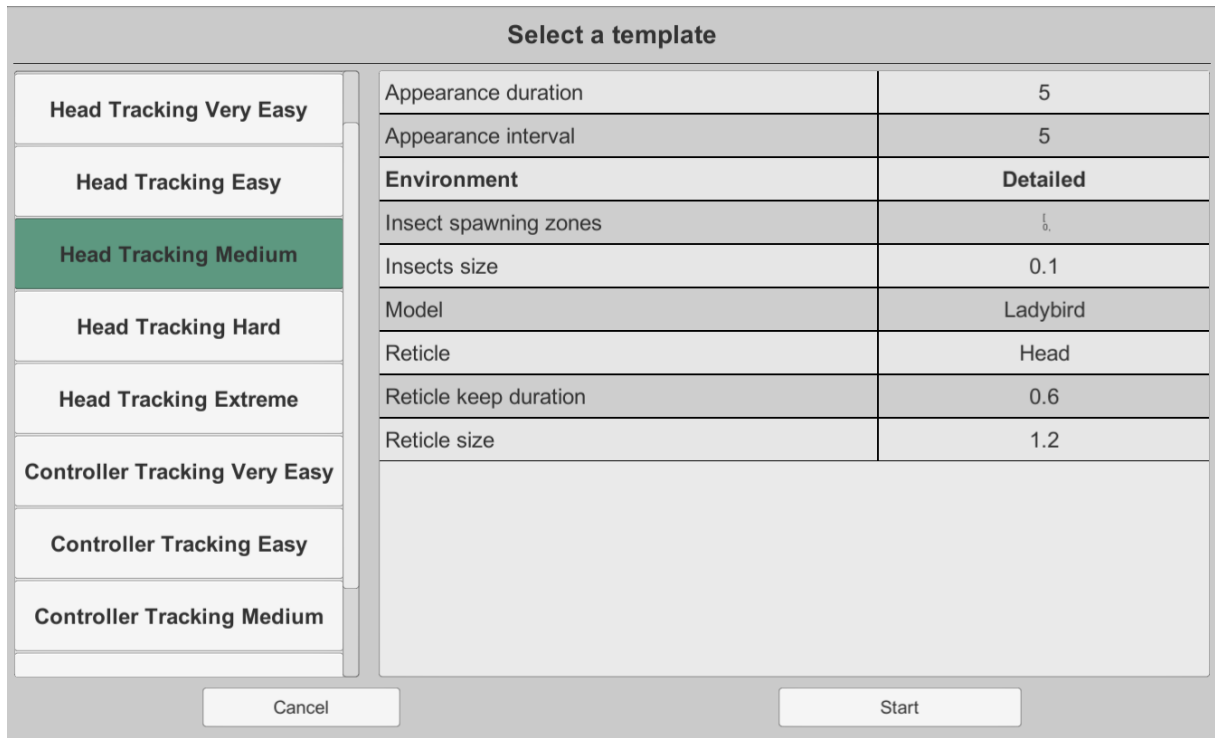
Bug spawning zone

Bug spawning zones can be selected to only work on certain sides of patients. The selection is made by simply clicking the required areas. At least two zones must be activated. When a zone is activated, it turns blue.

Bugs spawning zone :

The patient

When you start the **Target Tracking** software from Patient Management in *protocol mode*, you will arrive on a home page from which you can find ten protocols with difficulty levels ranging from very easy to extreme. The protocols propose to track the target using the head or the controller.

It is recommended to start with a "very easy session" in order to measure patients' tolerance to the stimulation and the proposed VR environment.

For each proposed protocol the different settings are already in place. Just validate the selected protocol to start the application.
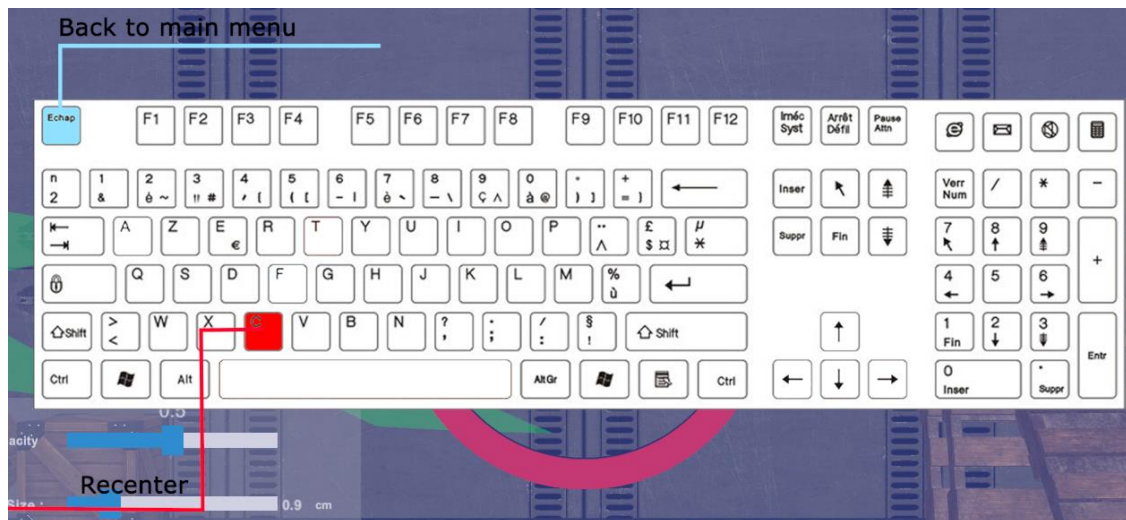
The Start/Quit buttons allow the environment to be played back or stopped entirely to adapt the experience to the patient's sensations.

3.4. Shortcuts

Keyboard or joystick shortcuts can be accessed in two ways:

- on the "Shortcuts" tab available at the start interface level
- within the module, by clicking on the joystick icon in the upper right corner of the screen

3.5.   Data processing

Data retrieval and analysis uses the Patient Management software.