



**REF** **Head-Eye-Coordination**

**CE** Class I Medical Device

# User manual

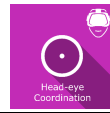
## Distribution mode

Available for direct download at  
<http://virtualisvr.com/espace-client/>

Use under licence

 **VIRTUALIS**

Avenue de l'Europe - 34830 CLAPIERS - Tel. 09 80 80 92 91



## DESCRIPTION

**Head-Eye Coordination** is an analytical or comprehensive rehabilitation software for the cervical spine, for vestibular stimulation and hemineglect rehabilitation.

## INDICATIONS

“Oculocephalic” type cervical spine rehabilitation and balance disorders. 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 3m<sup>2</sup> to allow for risk-free movements.

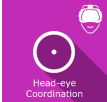
Take a 10 to 15 minute break every 30 minutes of use.

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.

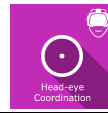


***Any serious incident should be notified in writing to [qualite@virtualisvr.com](mailto:qualite@virtualisvr.com)***



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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.

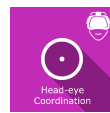
Virtualis declines any liability for any disorders suffered by patients during or after use of its software.

### 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**

NVIDIA: Gen9 GTX 970 / Gen10 GTX 1060  
AMD Radeon: R9 290 / RW 480 / Vega 56

**CPU**

Intel: I5 4590  
AMD: FX 8350 / Ryzen 1400

**Operating System**

Windows 7 SP1

**RAM**

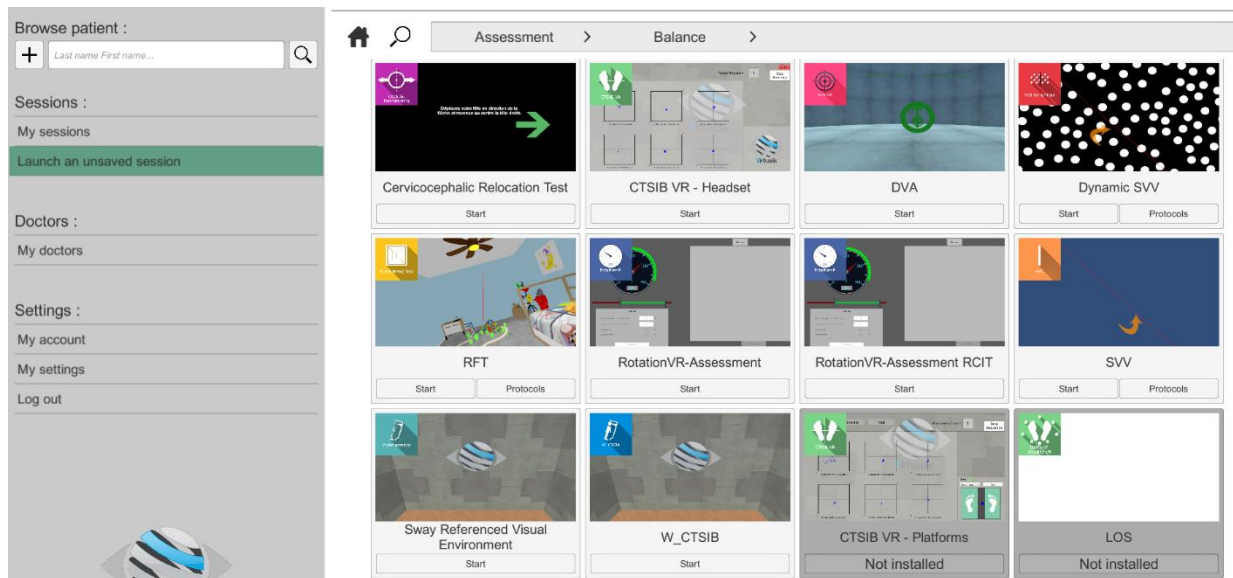
8 Go

**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.

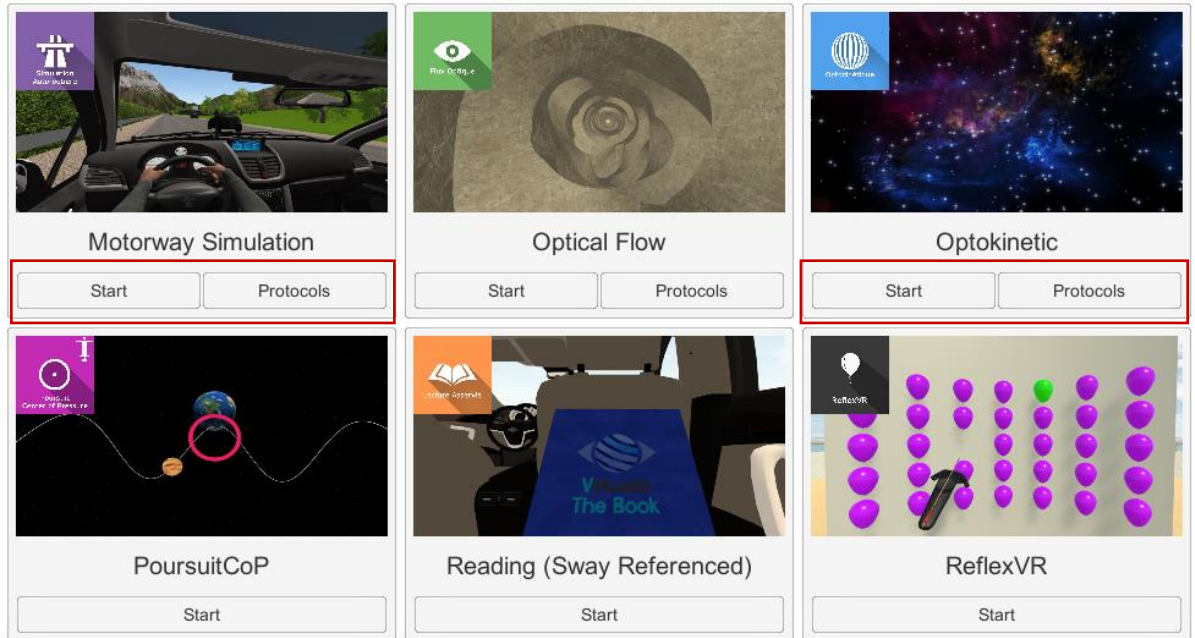
The software can be grouped according to criteria such as "Assessment" or "Re-education" and then by pathology type: Neurology, Balance, Functional or Travel sickness.

You can start or switch from one software to another from the home page by clicking the corresponding "Start" or "Protocols" button.

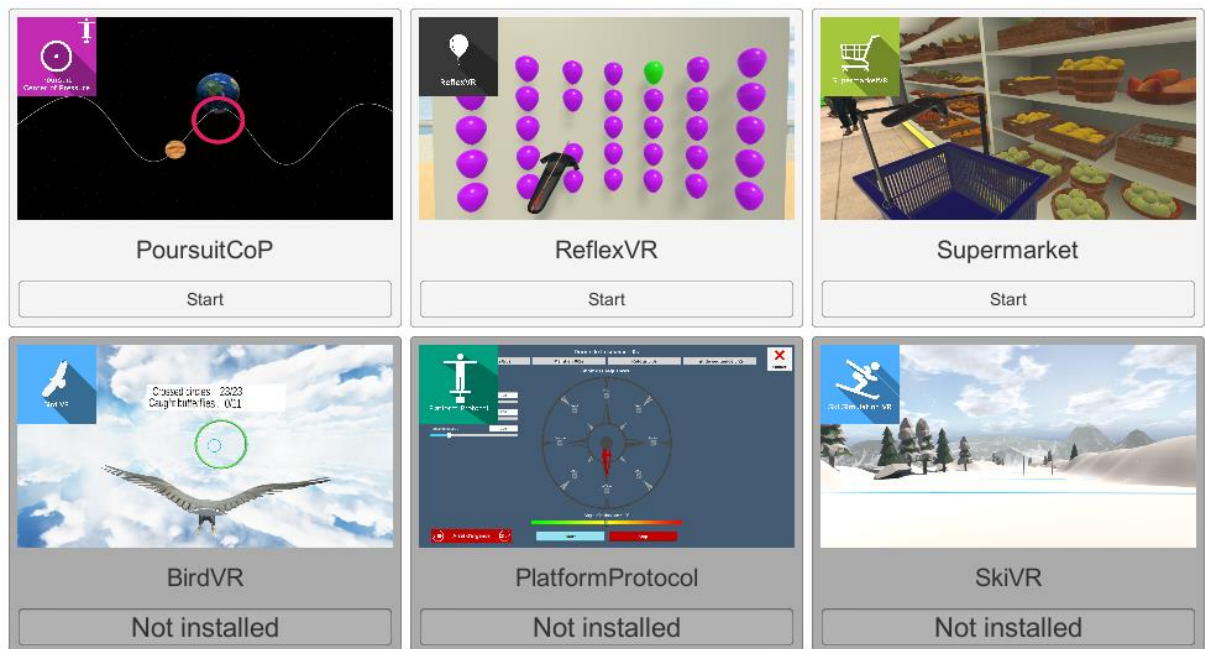


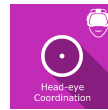
Some software can be started either in **manual mode**, by directly clicking the "Start" button, or in **protocol mode** by clicking the "Protocols" button.

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.



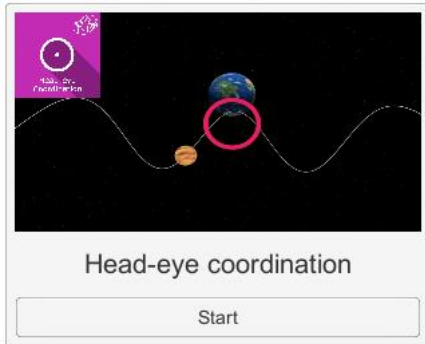
Software that is not part of your subscription package is greyed out. If you want to use it, please contact our sales department.





### 3. HEAD-EYE COORDINATION

#### 3.1. Start interface



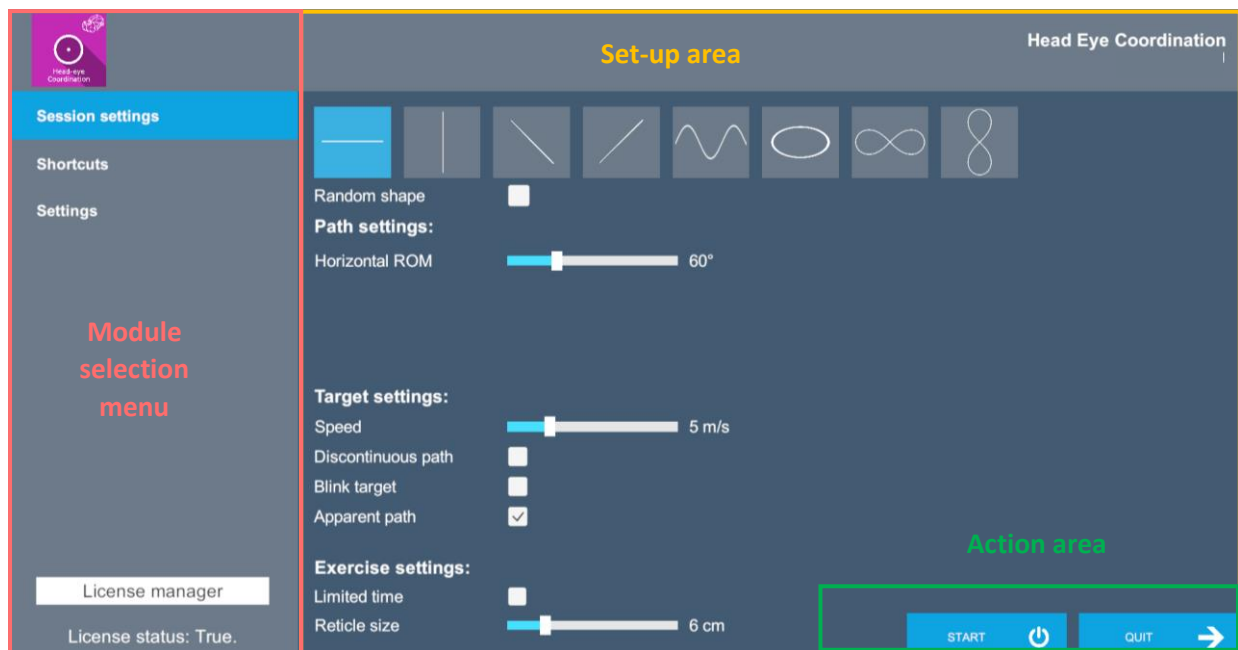
When the software is started in **manual mode** ("Start" button), the opening is performed in a launch interface, consisting of a module selection menu on the left, a set up area on the right, and an action area at the bottom right.

Depending on the module selected in the left menu, the set up area shows the various possible settings/information.

It is possible to access the general Patient Management menu from the start interface by simply clicking the "Quit" button located in the action area, or by pressing the "escape" key on

the keyboard.

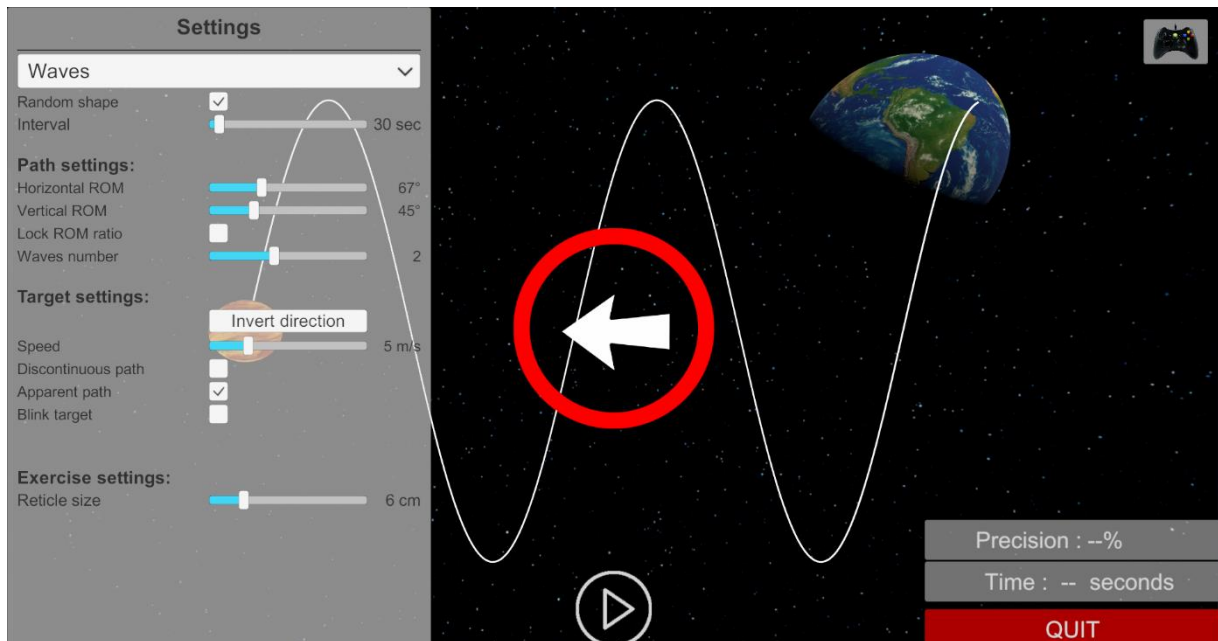
The module is launched by simply clicking the "Start" button in the action area.



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.

The Start/Quit buttons allow the environment to be played back or stopped entirely to adapt the experience to the patient's sensations.

Once an environment has been selected, it launches in the headset, and you can see and track what is happening in your patients' headset from the software window.



### 3.2. Module field of application

This module is used to work on the cervical spine by tracking a target according to a trajectory and amplitudes defined by the practitioner. Patients must keep the target within a viewfinder controlled by the patients' head position (cervical spine).

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

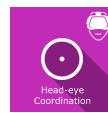
### 3.3. Installing the patient

Seated, hands clasped behind the back (avoid thoracic/lumbar spine compensation): Work on cervical spine amplitudes

Standing position: Global balance work

Standing position on a foam block (balance pad): Specific balance work (vestibulospinal reflex)





### 3.4. Session settings

The variable settings for this module are as follows:

#### Movement path

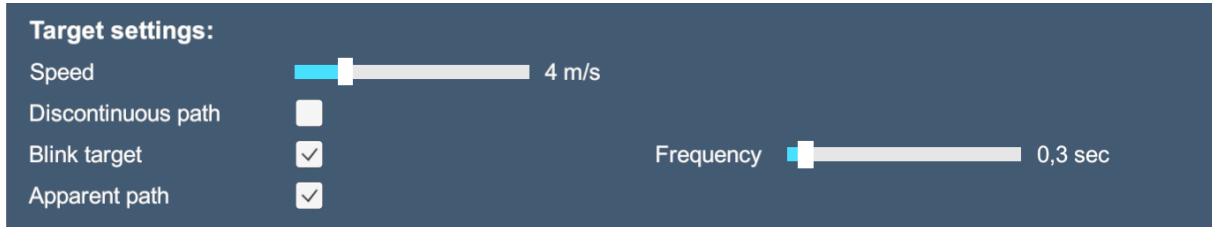
Several types of path are available. Simply click the required path to select it. A random mode is used to generate a path and its animation setting completely randomly at a selected interval.

#### Path settings

Each predefined path shape can be customized by acting on settings such as the horizontal and vertical angle, the number of waves, etc.

Horizontal and vertical angles can be “frozen” by checking the "Lock ROM ratio" box.

### Target settings



The object movement speed can be set using the cursor.

The exercise sequence is fully modular. The track can consist of a one-way or round trip by ticking the "Discontinuous path" box.

The object can remain displayed for the duration of the exercise or appear intermittently by selecting the "Blink target" option. The disappearance interval and duration can be modulated by directly selecting the required value in the "interval" box.

The object path can be displayed or hidden by checking the "Apparent path" box.

### Exercise duration

The exercise duration can be defined using a fixed time by checking the "Limited time" box and indicating the required value using the cursor, or using a free mode if the box is not checked.

### Reticle size

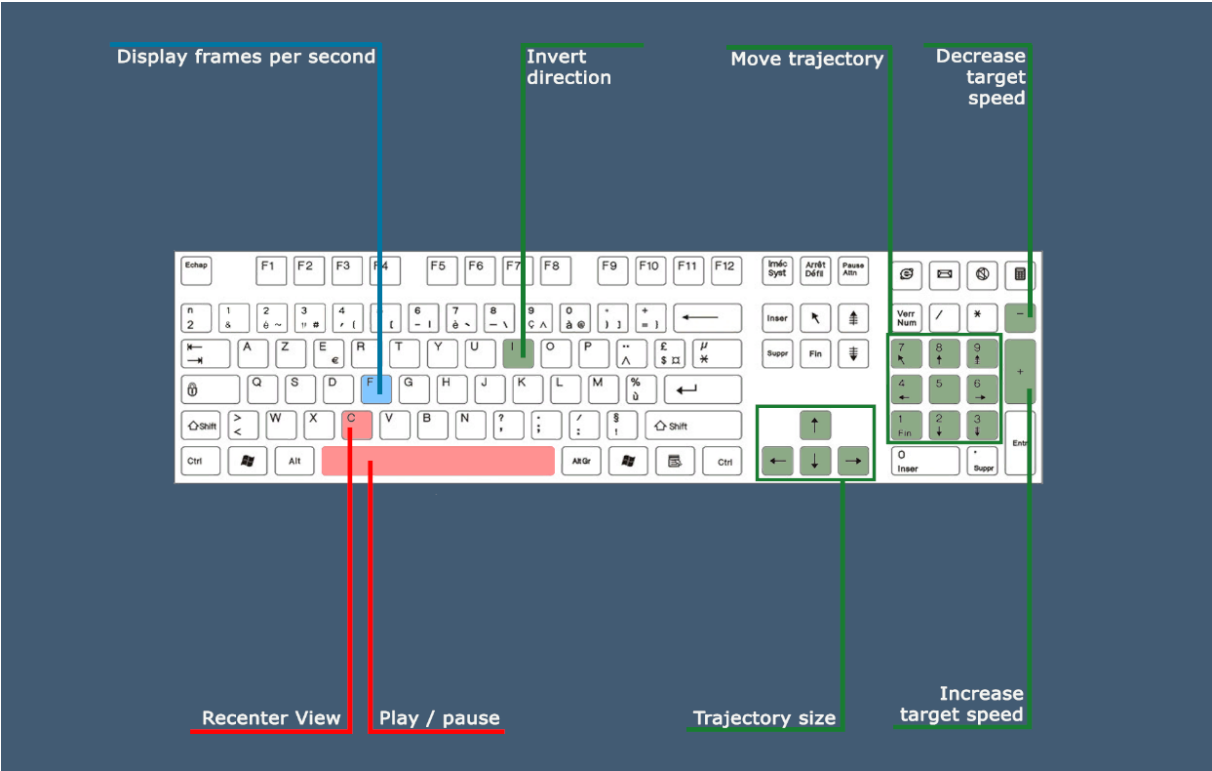
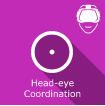
The reticle diameter can be set on the cursor using the mouse. More accuracy is required if the reticle size is small.

The target tracking mode is by direct tracking using patients' head movements (requires trackers).

## 3.5. 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





### 3.6. Data processing

Data retrieval and analysis uses the Patient Management software.