



**REF** **Waves (Sway referenced)**

**CE** Class I Medical Device

# User manual

## Distribution mode

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



## Table of contents

1.	GENERAL.....	3
1.1.	Description.....	3
1.2.	Indications.....	3
1.3.	Module field of application.....	3
1.4.	Intended user.....	3
1.5.	Warnings and caution.....	4
1.6.	Hardware and minimum configuration requirements.....	5
1.7.	Required accessories.....	5
2.	SOFTWARE USE.....	5
2.1.	Patient setup.....	5
2.2.	Session settings.....	6
2.3.	Session.....	7
2.4.	Shortcuts.....	7
2.5.	Results.....	8
2.6.	Data processing.....	8

## 1. GENERAL

### 1.1. Description

**WAVES (SWAY REFERENCED)** is an immersive 3D simulation software based on virtual reality technology, meaning a person can be immersed in a digitally created artificial world. The software is used for desensitization in cases of naupathia (sea sickness).

### 1.2. Indications

Treatment of naupathia (kinetosis), landing sickness.

### 1.3. Module field of application

Whatever head movements the patient makes, the visual feedback of these movements is distorted: the patient sees a fixed image, which follows all their movements.

The image of waves in motion (psychologically very triggering environment) sends visual movement information uncorrelated to the movement the patient is subjected to. It is recommended to subject the patient to vestibular stimulation during immersion to cause this specific visual-vestibular conflict.

Angular accelerations (more canal stimulation) with rotations (passive, therefore carried out by the practitioner) on a rotating chair or swivel chair, and/or linear accelerations with flexion/extension, head tilts (more otolithic stimulation).

Configurable sea animation (from "flat sea" to "raging sea")

- Visual Information: present (distorted: image dependent on patient head movements).
- Vestibular Information: present, decorrelated.

### 1.4. Intended user

Healthcare professionals: physiotherapists; occupational therapists; neuropsychologists; ENT doctors; neurologists; PMR doctors (physical medicine and rehabilitation), etc.

Research Centers: CNRS, CHU, INSERM, etc.



## 1.5. Warnings and caution

Immersion in Virtual Reality is a powerful tool, especially for stimuli that can induce sensory conflicts.

### WARNING



These stimulations can potentially cause certain disorders: vagal discomfort, epileptic seizures, migraines, vomiting, malaise, dizziness, syncope etc.

This type of re-education must be approached progressively, particularly in Virtual Reality where the stimulation is "powerful".

The contraindications are identical: Mainly epilepsy and migraines.

### RECOMMENDATION



As postural reactions can be spectacular, we **STRONGLY** recommend that you place the patient in a secure environment and stay close to him/her throughout the session to anticipate any loss of balance or discomfort caused by the use of virtual reality.

### RECOMMENDATION



It is also recommended to increase the duration and intensity of stimulation very gradually after an initial short session to ensure the patient's tolerance to this type of stimulation.

Motion sickness is treated by "habituation", so you need to recreate the symptoms experienced during transport.

### WARNING



It is essential to stop the session when the first symptoms appear, generally "sweating".

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.

It would be counterproductive to take into account the fact that some motivated patients may wish to go further. It's up to the professional to "dose" immersion so as not to provoke neurovegetative symptoms. This type of symptom can intensify in the hour following the session.

Nor can Virtualis be held responsible for any disturbances suffered by patients during or use of their software.

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.



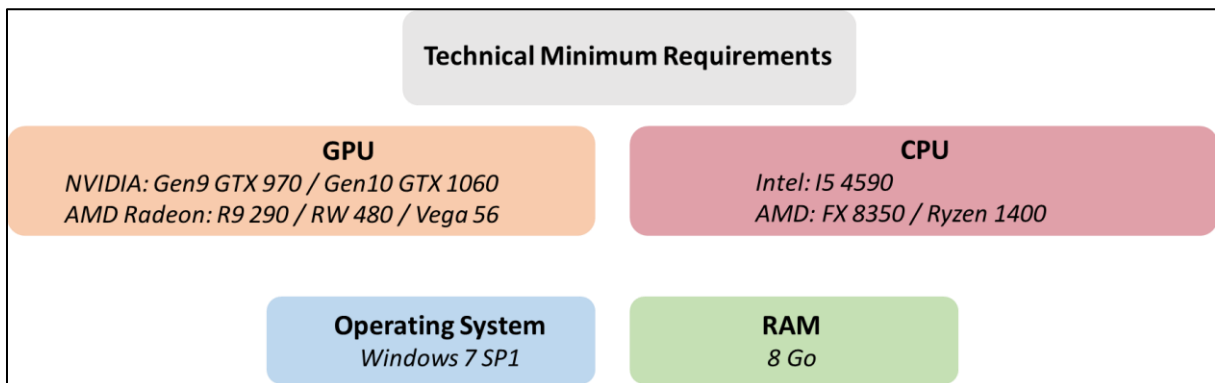
**Any serious incident should be notified in writing to [qualite@virtualisvr.com](mailto:qualite@virtualisvr.com)**

## 1.6. 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)

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



## 1.7. Required accessories

VR headset.

## 2. SOFTWARE USE

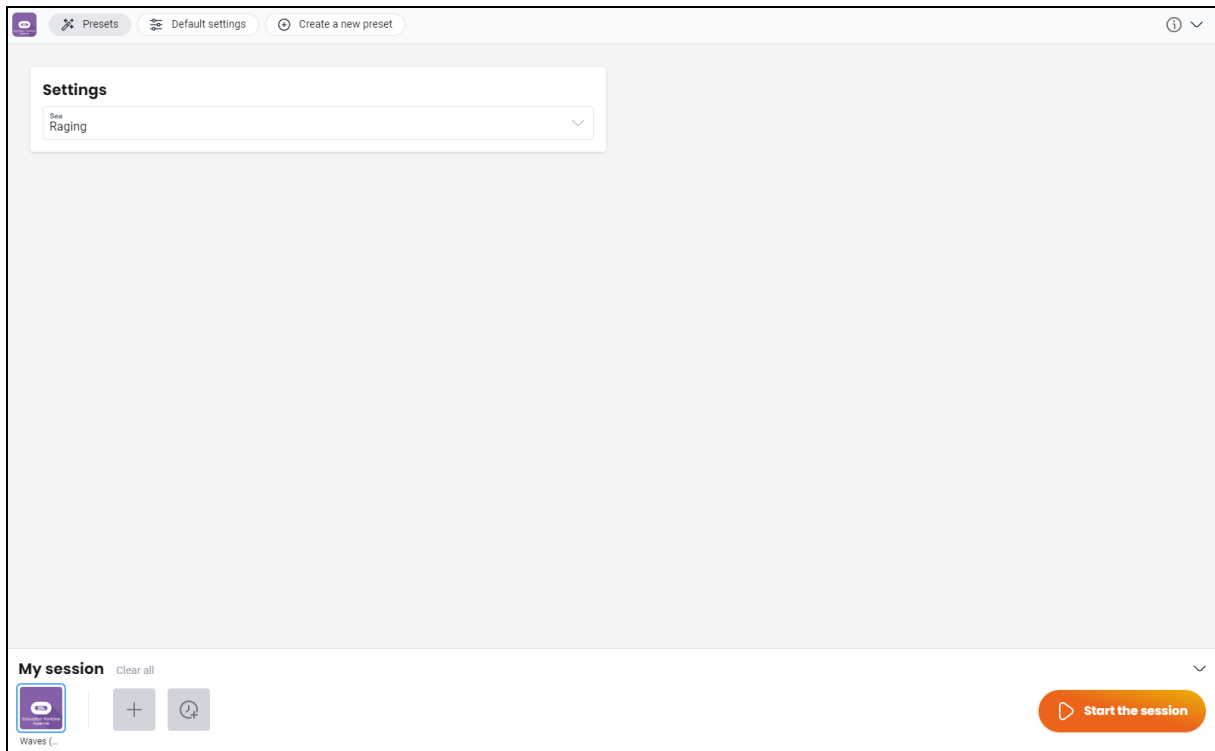
### 2.1. Patient setup



It depends on the therapist's goals.

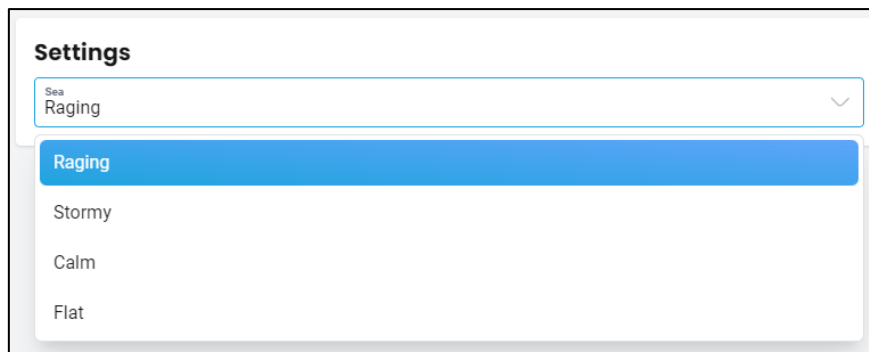
The patient can be seated in a chair or seated on a swivel chair, with feet off the floor, so that the practitioner can perform angular accelerations (rocking movements and random half-turns are sufficient).

## 2.2. Session settings



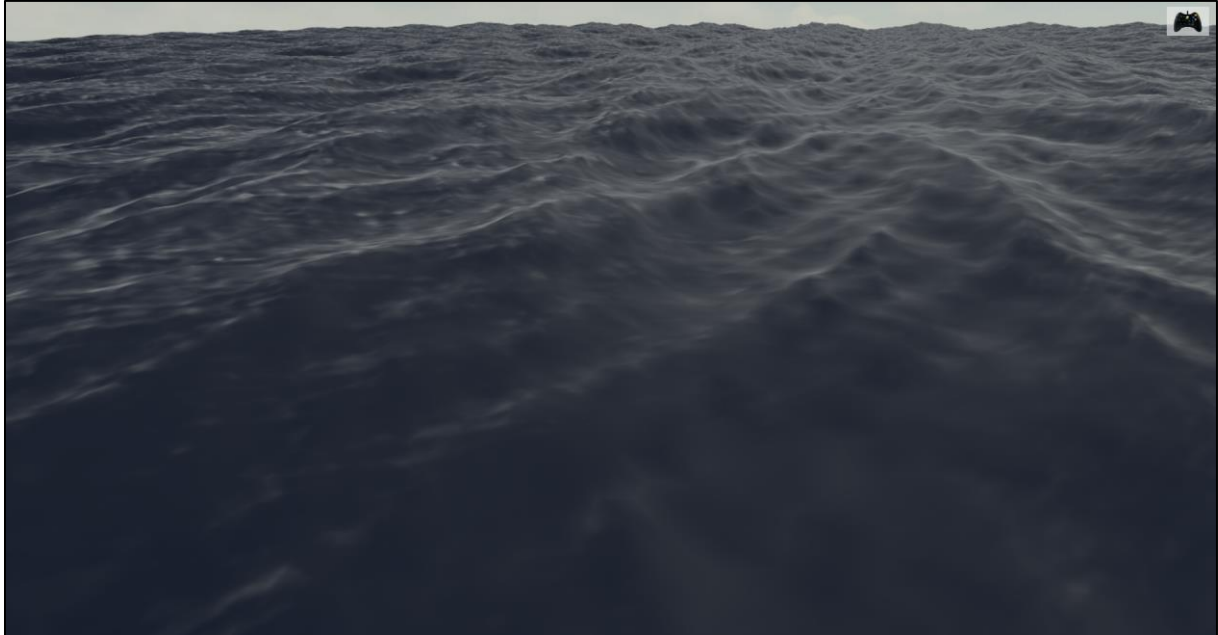
### Settings:

The type of sea can be selected (raging, stormy, calm, flat) depending on patient sensitivity.



### 2.3. Session

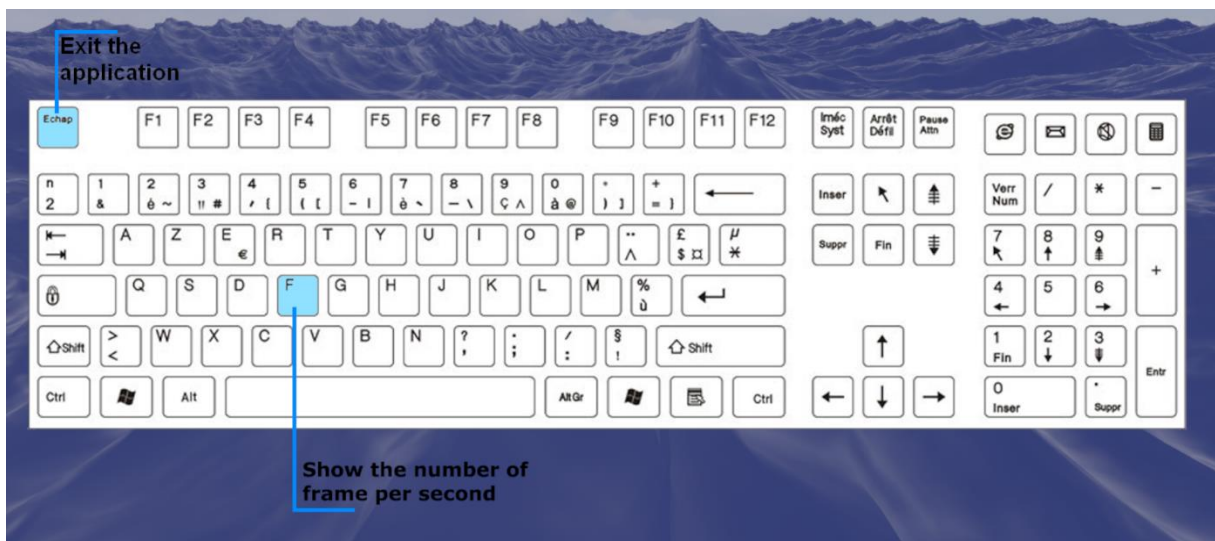
Once the presets have been selected, click on the "Start the session" button in the bottom right corner of the screen.



End the session by pressing the "Escape" key on the keyboard.

### 2.4. Shortcuts

During the session, the shortcut list is found by clicking on the Xbox controller icon at the upper right corner of the screen.



## **2.5. Results**

No results are displayed at the end of the session.

## **2.6. Data processing**

Data retrieval and analysis uses the Patient Management software (see dedicated user manual).

