# REF Visual Motion Sensitivity

CE Class I Medical Device

# User manual

## Distribution mode

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

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# 1. GENERAL

## 1.1. Description

**Visual Motion Sensitivity** software is an immersive 3D simulation based on virtual reality technology, that immerses a person in a digitally created artificial world.

It is used to assess visual sensitivity to perceived movements.

## 1.2. Indications

This module assesses people's postural response to optokinetic and optical flow visual stimuli.

## 1.3. Contraindications

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

## 1.4. Software field of application

Vestibular pathologies, balance disorders, vertigo.

## 1.5. Intended user

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

Research Centers: CNRS, CHU, INSERM, etc.

## 1.6. 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 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 3m² 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.

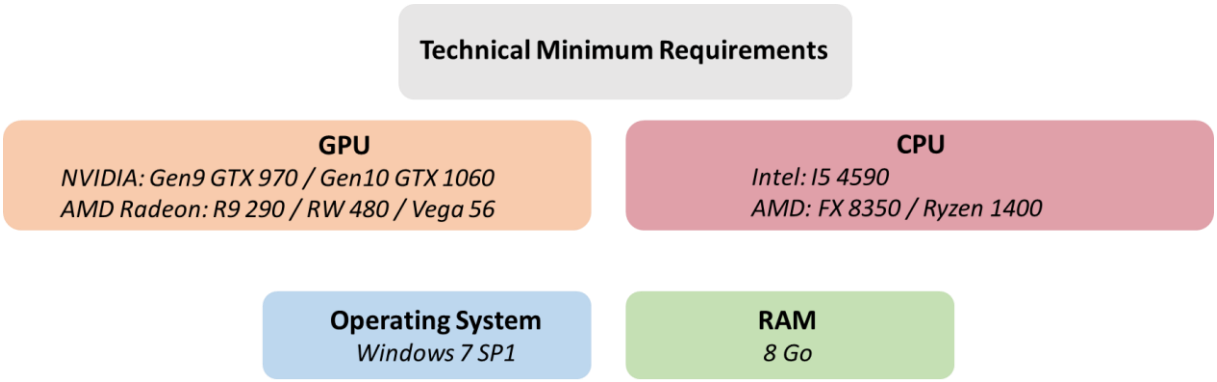
***Any serious incident should be notified in writing to qualite@virtualisvr.com***

### 1.7. 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)
- StaticVR or MotionVR platform

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




### 1.8. Required accessories

VR headset, StaticVR or MotionVR force platforms.

## 2. SOFTWARE USE

### 2.1. Patient setup

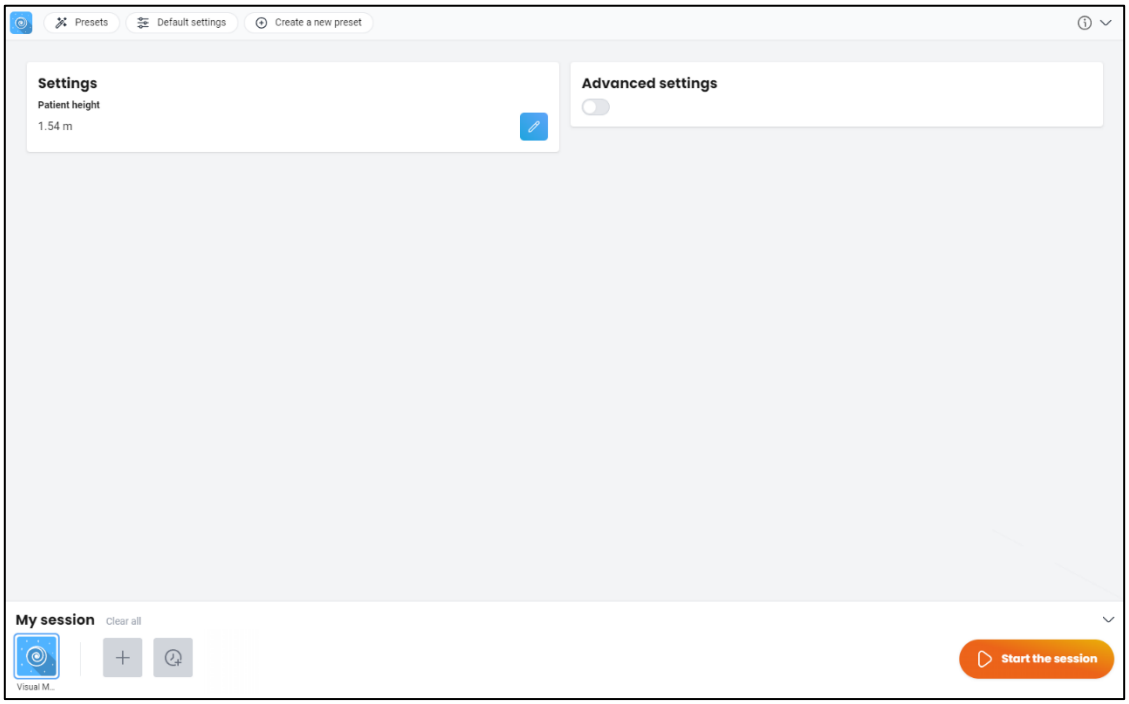
The patient stands on the StaticVR or MotionVR force platforms.

**RECOMMENDATION**

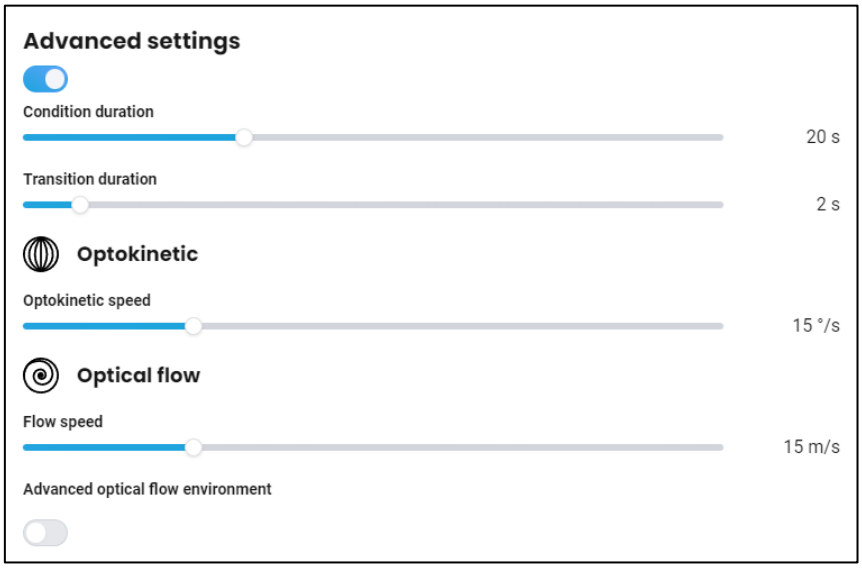
The medial malleolus of the patient's feet should be centered directly over the center horizontal line of the force platform.

Press the "**C**" key on the keyboard at the beginning of the session to recenter the patient's view.

## 2.2. Session settings




It is not necessary to modify the settings of this assessment module. However, you can access the following advanced settings for research purposes:




Modifying these parameters changes the module's purposes. Results must be interpreted with these changes in mind.

**Condition duration:**

Value: 2 to 60 s.

**Transition duration:**

Value: 1 to 15 s.

**Optokinetic speed:**

Value: 1 to 60°/s.

**Flow speed:**

Value: 1 to 60 m/s.

**Advanced optical flow environment:**

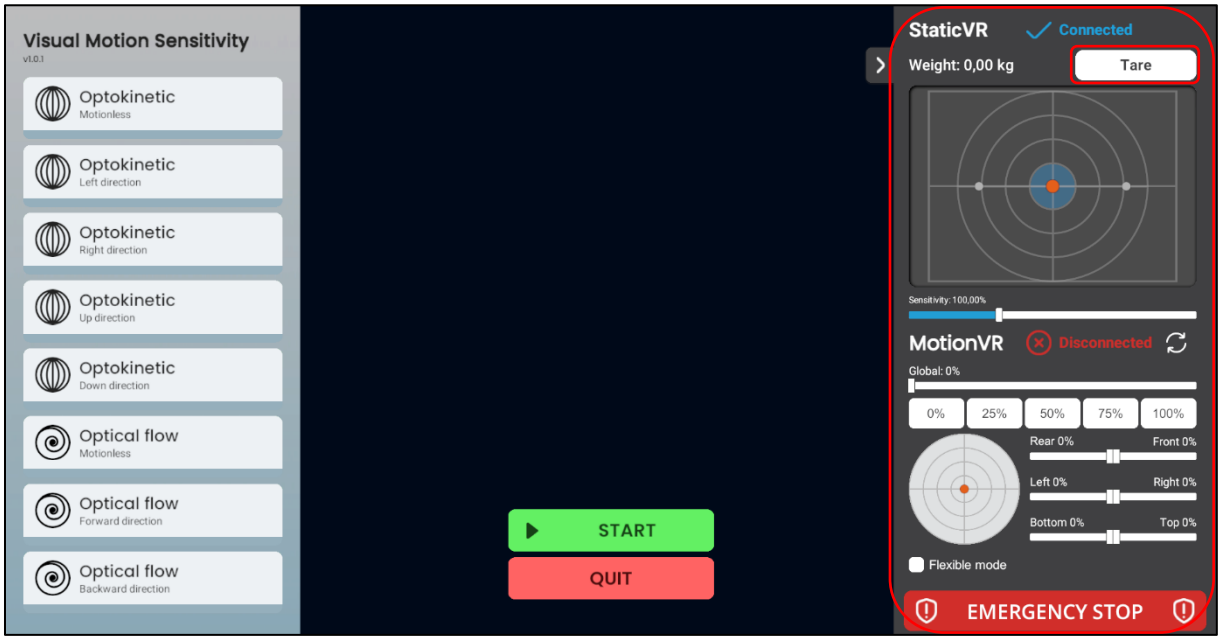
The advanced optical flow environment is a flow without the 3D objects (the meteorites present in the simple flow).

## 2.3. Session

Once the presets have been selected, launch the virtual interface by clicking on "**Start the session**" in the bottom right corner of the screen.

### 2.3.1. Force platform tare


1. Click on the arrow at the top right of the screen to display the force platform settings (StaticVR or MotionVR).

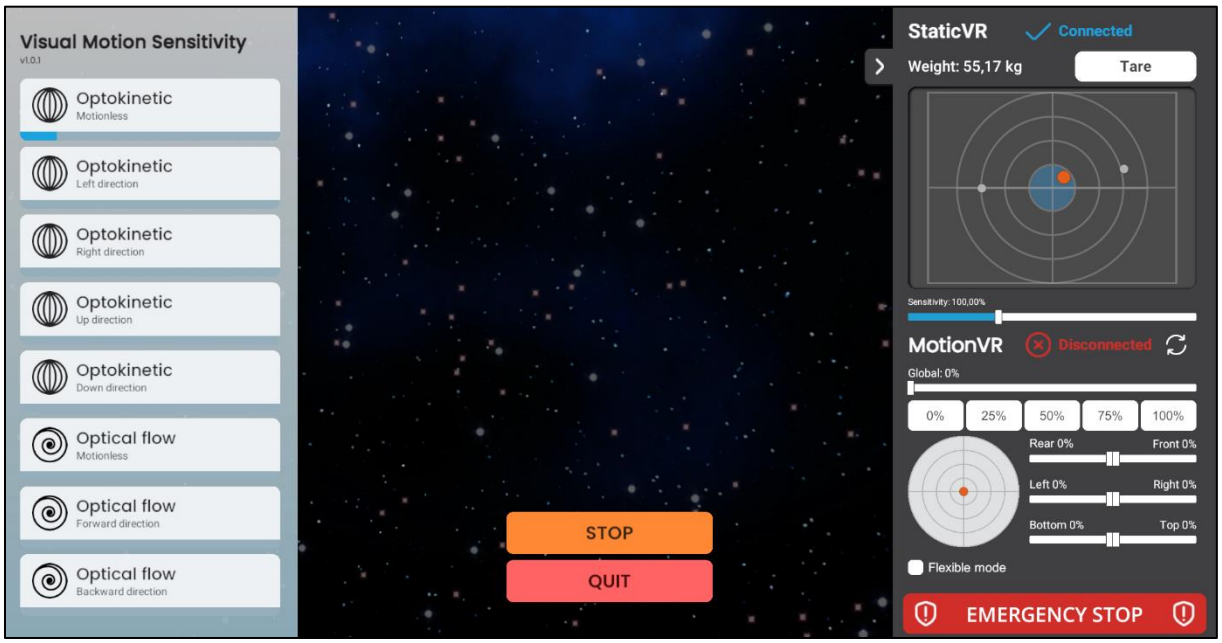



2. Click on the "**Tare**" button on the force platform (StaticVR or MotionVR) **before letting the patient step up onto it**.

3. Help the patient onto the force platform.

### 2.3.2. During the session

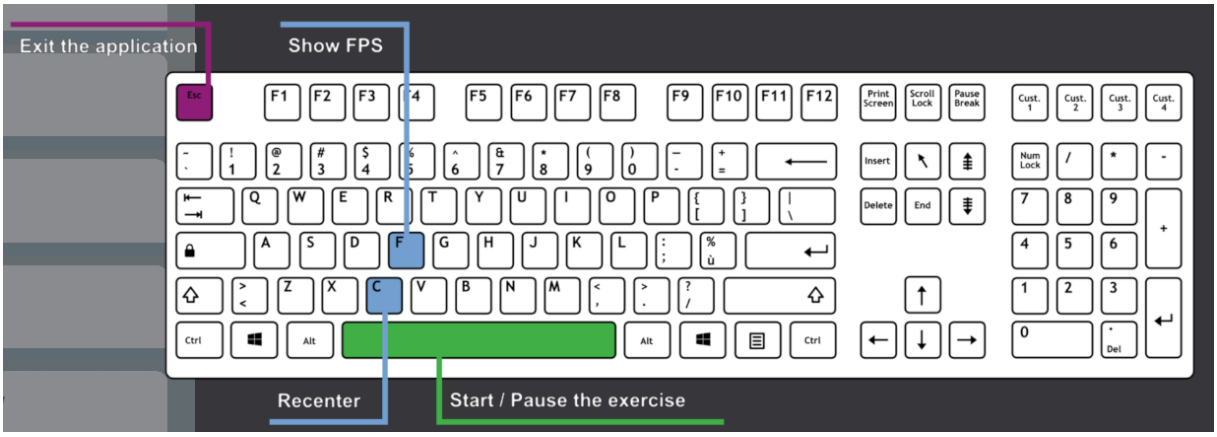
Once the patient has been correctly set up, start the session by pressing the "**Start**" button at the bottom of the screen, or press the "**Space**" key on the keyboard.




You can follow the session's progress on the left side of the screen.

## 2.4. Shortcuts

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

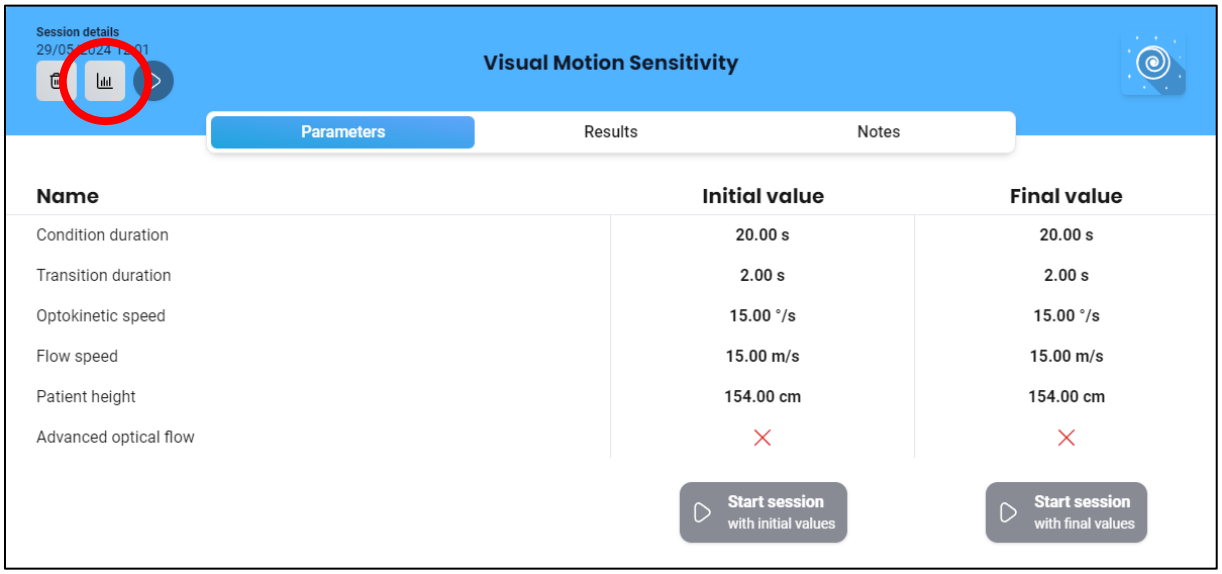




## 2.5. Results

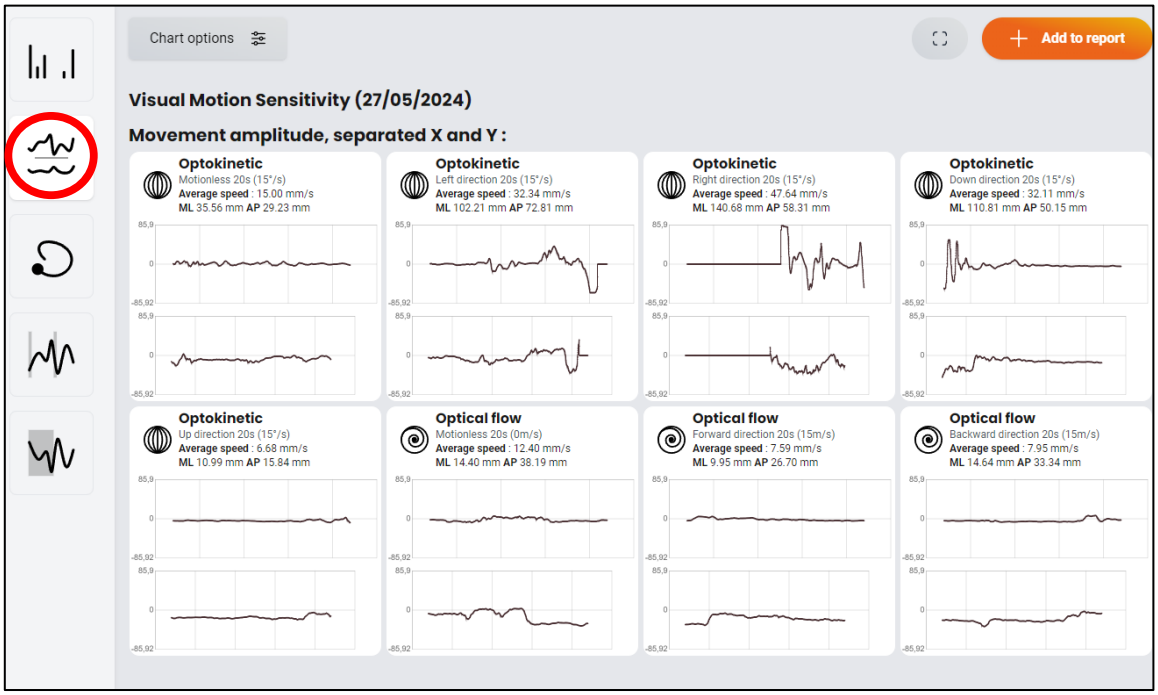
Summarized results are not available in this module.

To find the detailed results, click on the histogram icon.

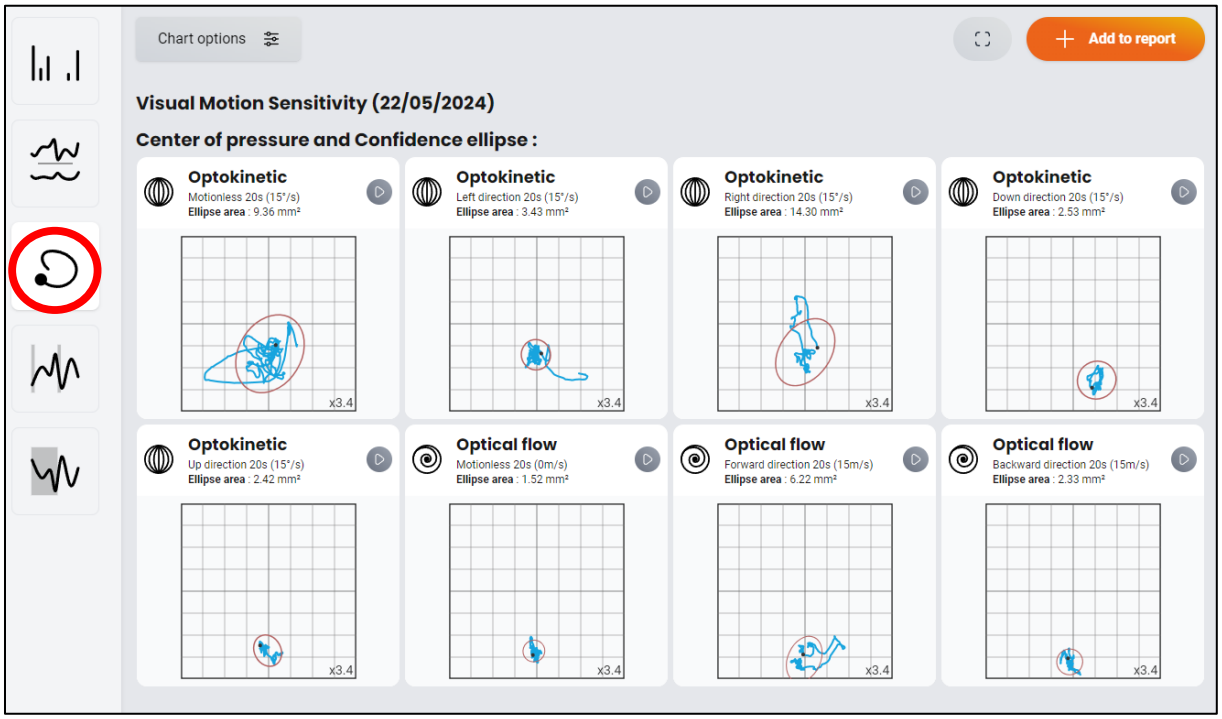



Several display modes are available for viewing results:

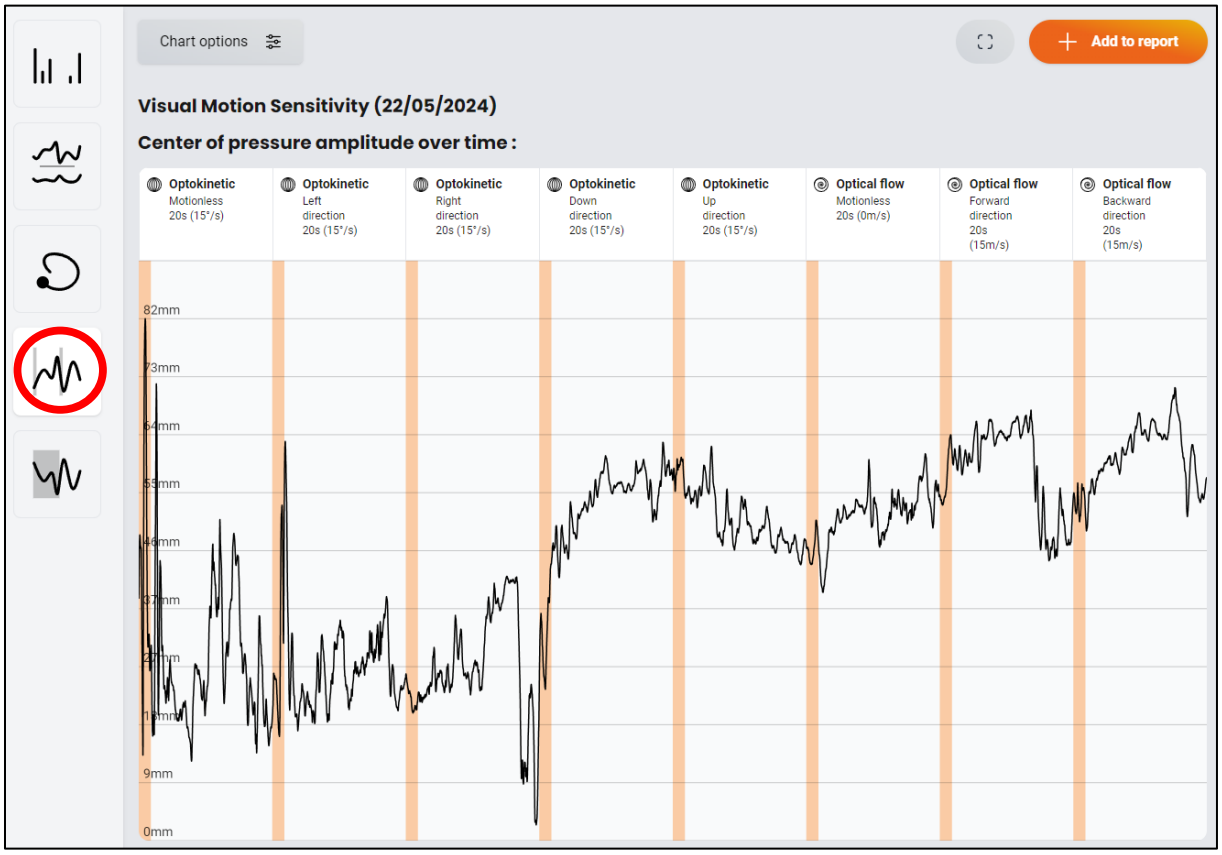

You see all the results by default: the speed of displacement of the center of pressure, the surface area and the amplitude of displacement for both conditions (Optokinetic and Optical Flow). Comparisons are also available.



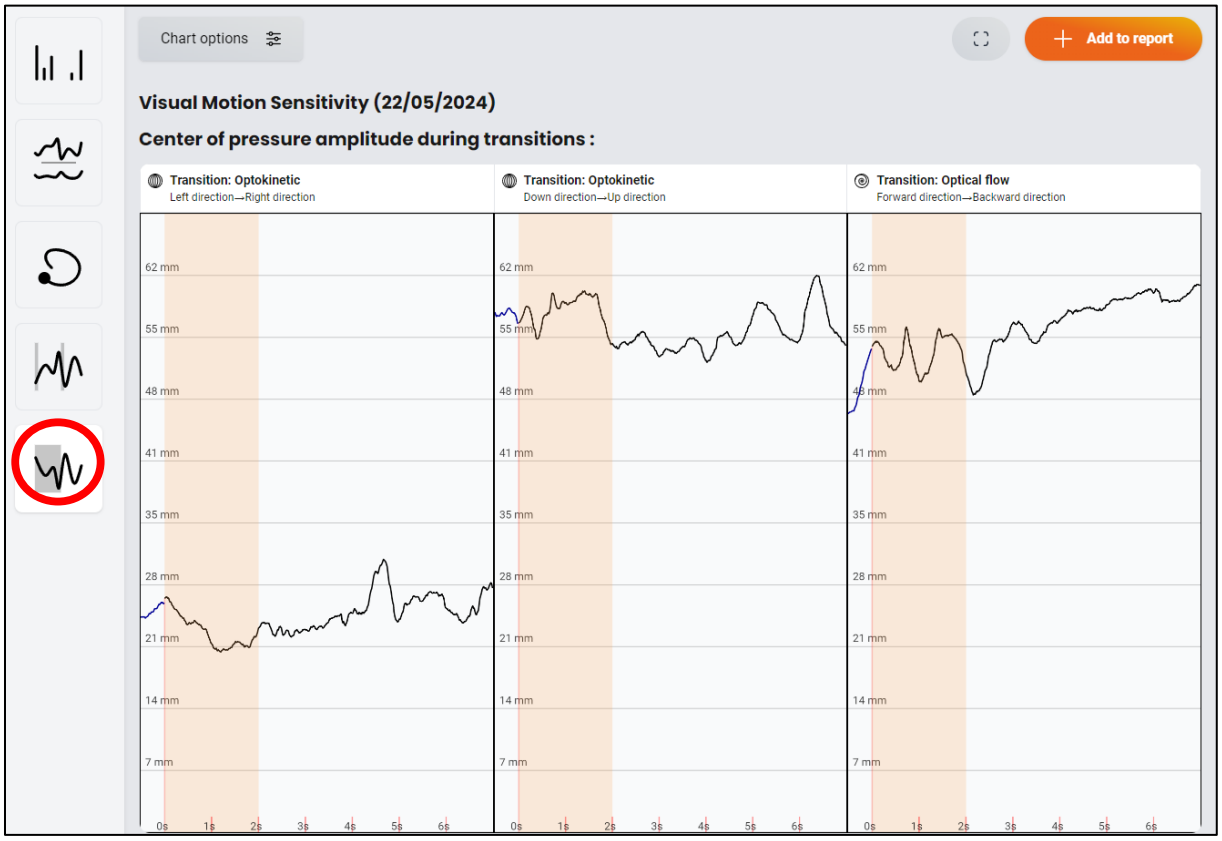

Click on the curves to view the amplitudes.




By clicking on “Center of pressure and confidence ellipse”, you can visualize the surface of the ellipse.




By clicking on the “over time” curve, you can see the amplitude of the center of pressure over the course of all tests. The orange areas are transition zones, preceding changes in direction.




To see in greater detail what happened during the transitions, click on the transitions button.

It displays the left-right and up-down transitions in Optokinetics, and the front-back transition in Optical flow.

By clicking on the "**Chart options**" button, you can modify the visualization of what happens during and after the direction change phases.

## 2.6. Data processing

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