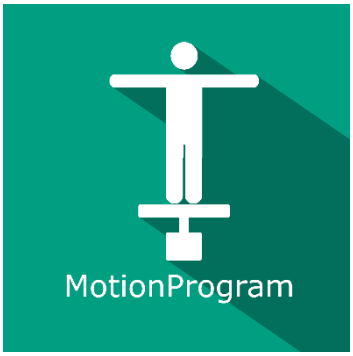


REF **MotionProgram**

CE Class I Medical Device

User manual

Distribution mode

Available for direct download at

http://virtualisvr.com/espace-client/

Use under license

VIRTUALIS

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

DESCRIPTION

MotionProgram is a control software for the MotionVR dynamic platform. It is used for the mobility settings of the MotionVR platform by axis and amplitude, as well as its reaction speed and sensitivity, in order to create precise imbalance situations for rehabilitation purposes.

INDICATIONS

Rehabilitation of balance, lower limbs and spine disorders

CONTRAINDICATIONS

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

FOR USE BY

Healthcare professionals: Physiotherapists; Ergotherapists; Neuropsychologists; ENT doctors; Neurologists; PM&R physicians (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

Table of Contents

1. GENERAL

1.1. Advice for use

Virtual Reality Immersion is a powerful tool, especially for optokinetic stimulation, optical flow, motorway simulations, dynamic SVV etc.

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

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

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 check the patient's 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)
- Dynamic posturography platform (Motion VR)

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

Technical Minimum Requirements

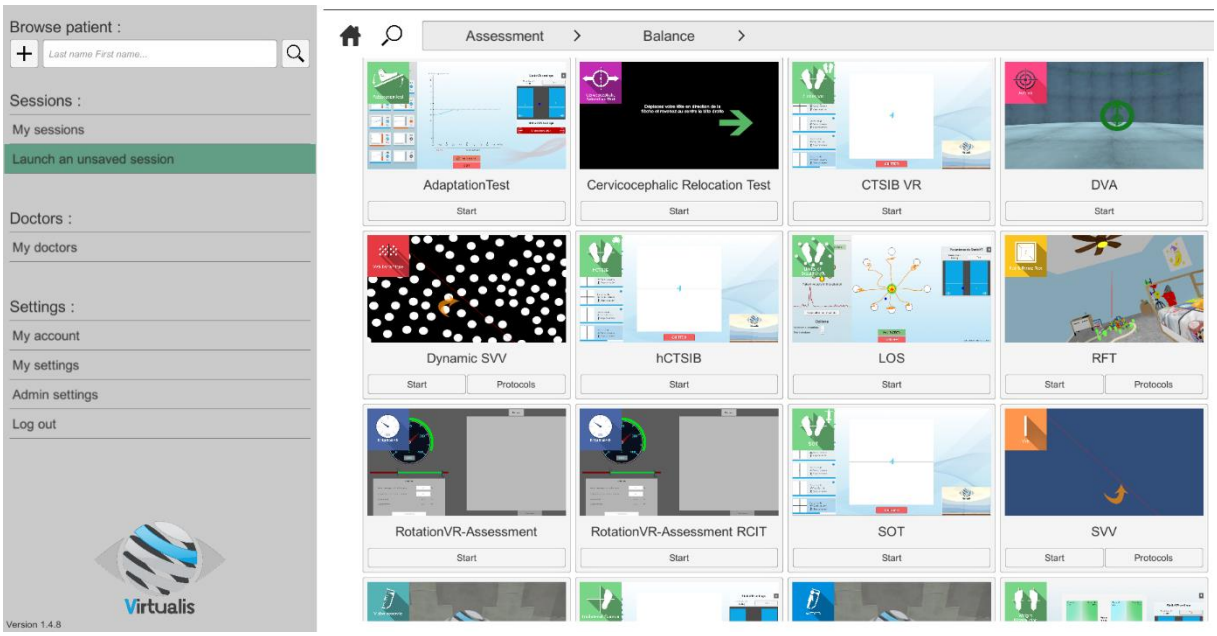
GPU	CPU
NVIDIA: Gen9 GTX 970 / Gen10 GTX 1060 *AMD Radeon: R9 290 / RW 480 / Vega 56*	*Intel: I5 4590* *AMD: FX 8350 / Ryzen 1400*
Operating System *Windows 7 SP1*	**RAM** *8 Go*

2. USE of PATIENT MANAGEMENT

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

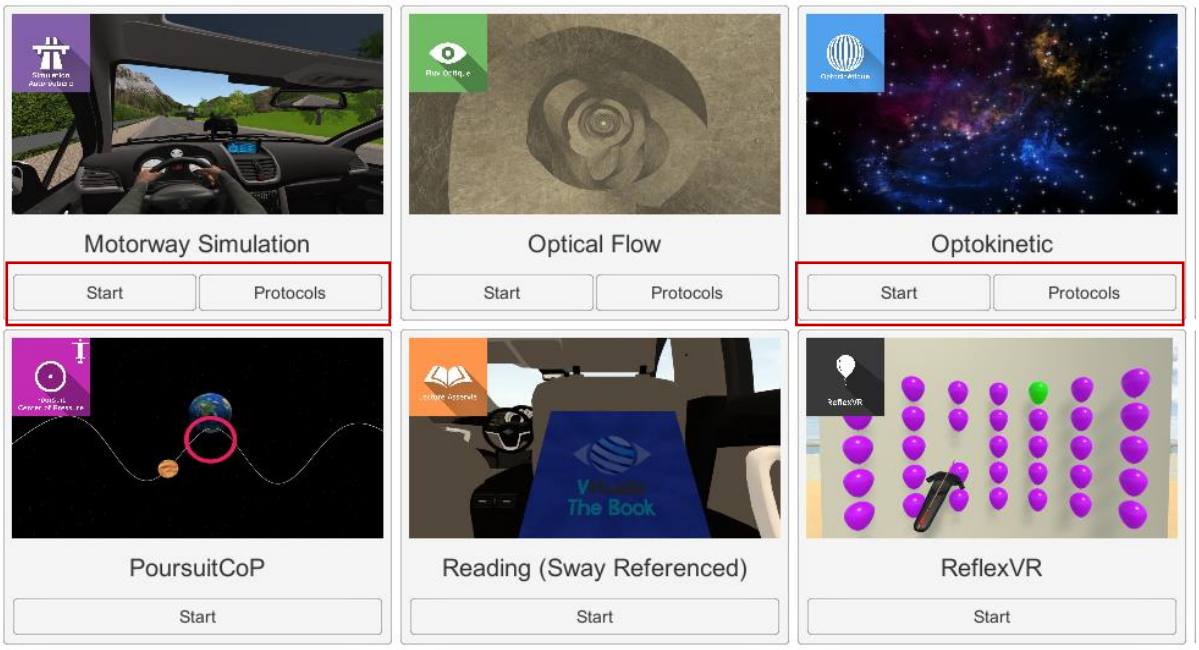
The softwares can be grouped according to criteria such as "Assessment" or "Rehabilitation" and then by pathology type: Neurology, Balance, Functional or Motion sickness.

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

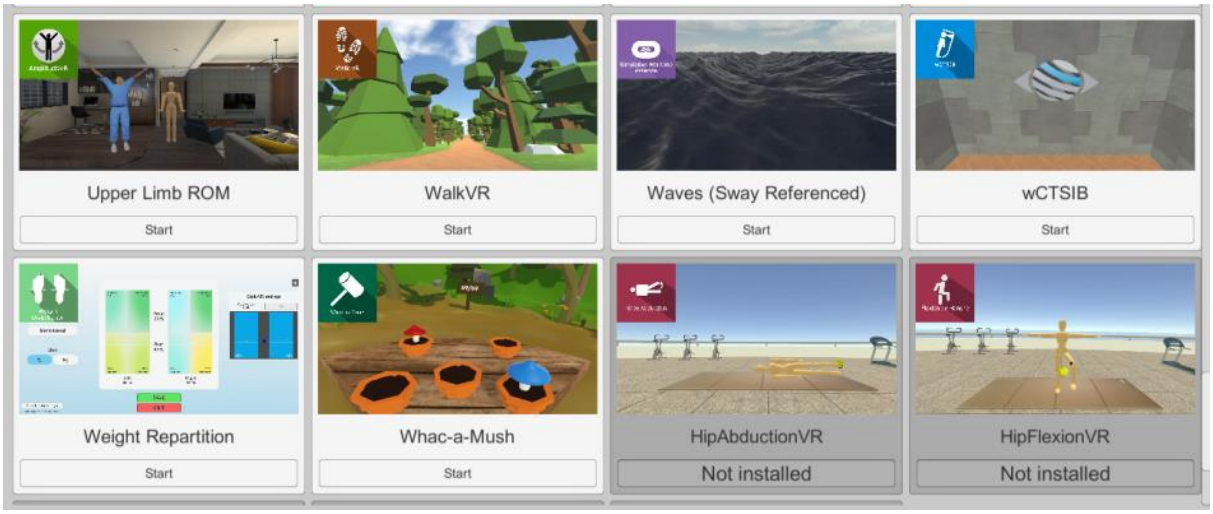


A number of softwares can be started either in ***manual mode***, by directly clicking the "Start" button, or in ***protocol mode*** by clicking the "Protocols" button.

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

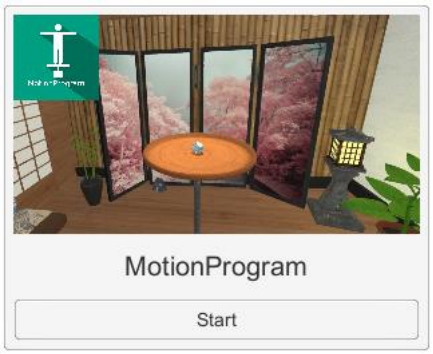


Softwares which are not included in your subscription package are grayed out. If you want to use them, please contact our sales department.



3. MotionProgram

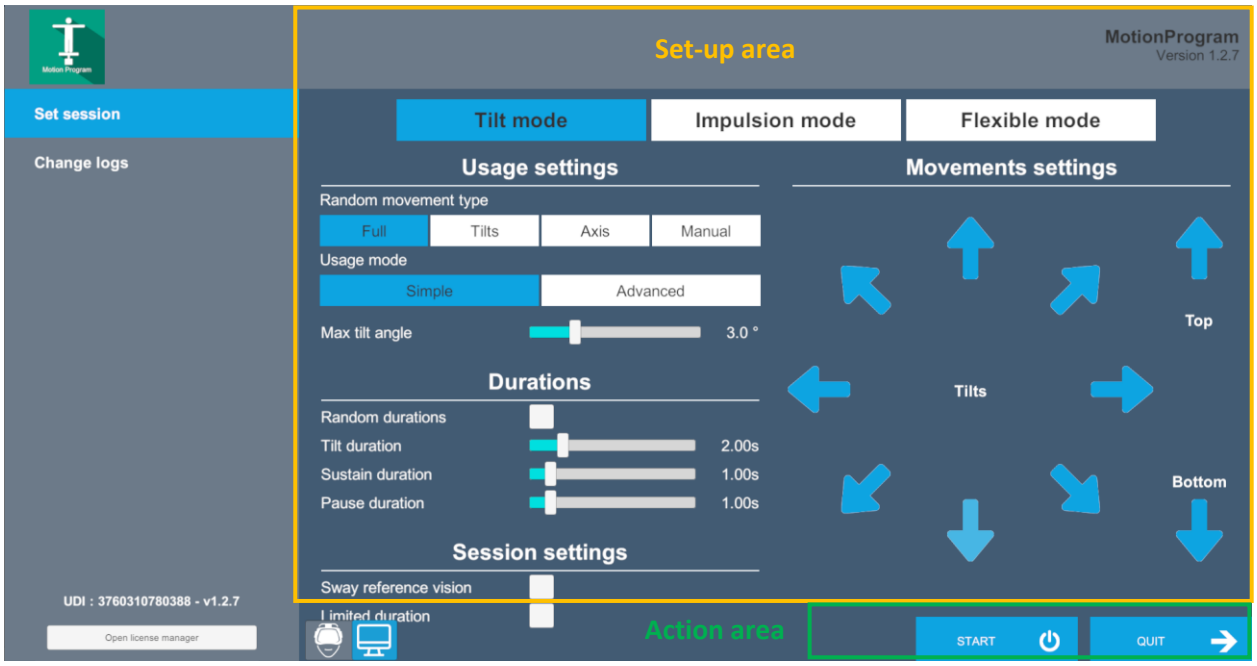
3.1. Start interface



When launching the software in ***manual mode*** (Start button), it opens 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 "quit" button located in the action area or by pressing the "escape" key on the keyboard.

The software is launched by simply clicking the "start" button in the action area.



Once this button has been pressed, the software is launched, taking into account the specified settings.

The selected environment is either launched in the headset or projected on a screen. If the headset option has been selected, you can see and track what is happening in your patient's headset using the software window.

3.2. Software field of application

Rehabilitation of balance disorders. Proprioceptive stimulation as part of lower limb and spine rehabilitation.

3.3. Installing the patient

Patient standing on dynamic force platform.

Positioning the patient on the platform:

- Center the patient's feet on the force platform.
- The medial malleolus of each foot should be directly centered on the horizontal line of the force platform.

Warning: It is recommended that all treatment sessions be performed with shoes removed, in order to get a standardized input of somatosensory system signals and to compare with the standard data set.

The dynamic force platform performs tilting or impulsion movements, depending on the selected settings.

INSTRUCTIONS given to the Patient:

The patient will have to maintain a ball in the center of a circular plate by modulating his plantar pressure. His plantar pressure will move the tray in the direction of the support.

Motion VR's programmed movements will aim at destabilizing the patient who will have to re-center his center of gravity at each change of direction in order to maintain the ball in the center of the board.

To stop a session (if the patient starts to fall, etc.), simply press one of the

buttons on the software interface.

3.4. Session settings

The software's variable settings are as follows:

Display mode

Two possibilities: Headset or Screen Mode

You can choose between "headset" or "screen" mode simply by clicking the corresponding icon; the selected icon switches to blue.

Headset mode: the environment is launched in the patient's headset; this mode is compatible with the "sway-referenced vision" option

Screen mode: Instructions will be communicated to the patient visually on an external screen. This mode requires a second screen connected to the computer

Warning: in this mode the headset should not be used and the patient should be facing the second screen

Platform movement

Two types of movements are possible: tilt mode and impulsion mode

Tilt mode: the platform performs a tilting movement, maintains this position for a defined time before returning to the rest position

Impulsion mode: the platform performs an impulsion movement and immediately returns to the rest position

Flexible mode: this mode is controlled by the patient's CoP (center of pressure) variations. The platform is tilted depending on the patient's pressure and its importance.

If the "sway-reference vision" option is activated, the image is servo-controlled by head movements.

Usage settings

Random movement type

For the two types of platform movement modes (tilt or impulsion), four types of movements are possible:

Full: movements in all directions: up, down, front, front-right, right, back-right, back, back-left, left, front-left.

Tilts: movements in the 8 directions: front, front-right, right, back-right, back, back-left, left, front-left.

Axis: movements in the 4 directions: front, back, right, left

Manual: this is used to manually select directions by clicking the corresponding arrows;

The selected directions appear in blue

Usage mode

Simple: the maximum tilt angle is the same for all selected directions

Advanced: the maximum tilt angle can be entered manually for each selected direction

Durations

Random durations:

If this option is enabled, the execution time of each platform movement is randomly defined within a given time interval.

In tilt mode:

Tilt duration: the time set to perform the tilt movement

Sustain duration: the time set to hold the platform in a position

Pause duration: the platform pausing time set between two tilts

In impulsion mode

Duration between impulsions: the platform pausing time set between two impulsions

Session settings

Sway-reference vision

Activating this setting by checking the appropriate box is used to link the vision to head movements

Limited duration

Activating this setting by checking the appropriate box is used to set the session duration

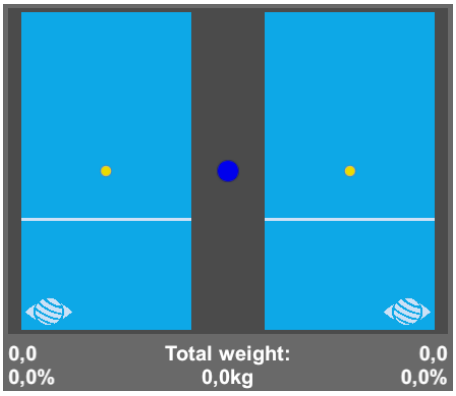
StaticVR settings

Raw data sent by the platforms

Yellow dots: Center of Pressure (CoP) of each foot

Blue dot: Overall Center of Pressure (CoP)

The weight distribution for each foot is displayed



Smoothed data & settings:

Tare

Platform reset (must be carried out when empty)

Smoothing

Smoothing force applied to the data

Sensitivity

Multiplier applied to the data received

Decrease to reduce motion sensitivity

MotionVR settings

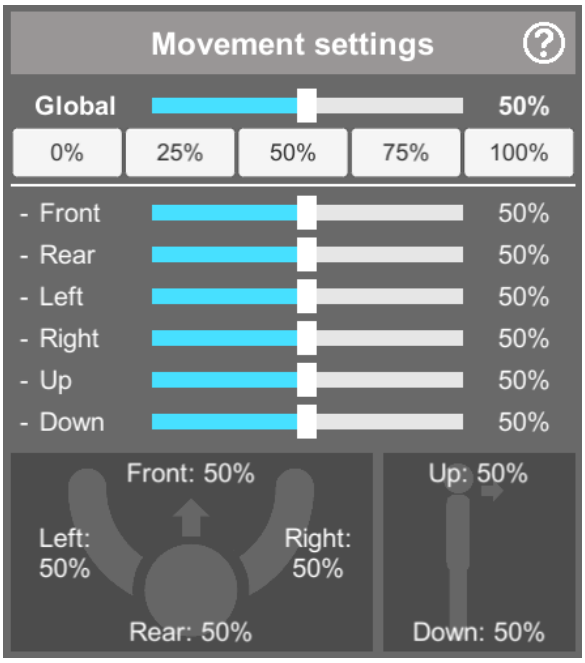
Movement settings

Platform amplitude values can be defined either by using the cursor or by selecting one of the proposed values by simply clicking on the corresponding button.

You can select an overall or per-axis movement amplitude, the presets provide a smooth transition.

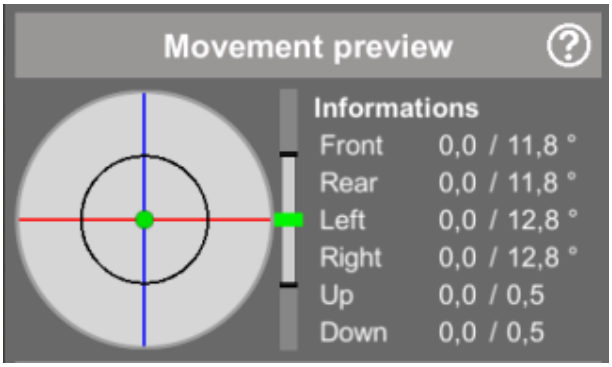
For example:

- To work in anteroposterior mode, reduce the left and right amplitude
- To work in mid-lateral mode, reduce the front and rear amplitude

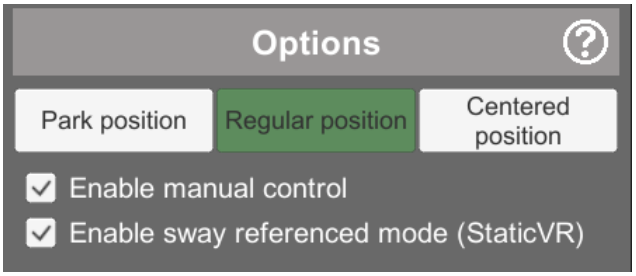


Movement preview

This is used to view the platform tilt, height and amplitude settings (the action area is delimited by a black circle).



Options



Platform positions

Park position: forces the platform to ground level. The height of the platform is set to the minimum.

Regular position: allows the platform to move normally, as provided for in the software

Centered position: forces the platform into a horizontal position at its operating height

Enable manual control

This is used to move around using the arrow keys on the keyboard and the "+ " and "-" keys on the numeric keypad (up and down).

Enable sway referenced mode (for StaticVR platforms)

The platform movement is coupled to the patient's center of gravity

If you press the emergency stop button, the platform will freeze in its current position.

A window opens and the following message appears

Warning:

Stopping the software or changing the window may cause the platform to reset to the default position and cause movement that could be dangerous for the patient. It is therefore advisable not to touch the computer again until you have secured the patient when the emergency stop is triggered.

3.5. Data processing

Data retrieval and analysis is done using the Patient Management software.