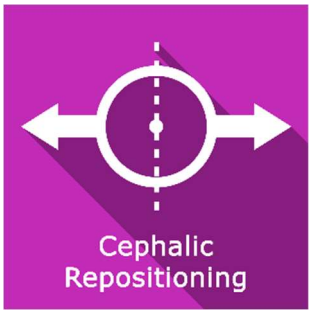


REF Cervical Joint Position Error Test

CE Class I Medical Device

User manual

Distribution mode

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

Table of contents

1. General information

1.1. Description

Cervical Joint Position Error Test software is an immersive 3D simulation based on virtual reality technology, i.e. it allows a person to be immersed in an artificial digitally created world**. Cervical Joint Position Error Test** is an assessment software for neck muscle proprioception.

1.2. Indications

Assessment of neck muscle proprioception as part of an overall assessment of balance, postural repercussions, the cervical spine...

1.3. Contraindications

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

1.4. Module field of application

This test measures cervical muscle proprioception effectiveness.

Ref : N. Pinsault et al. / Annales de réadaptation et de médecine physique 49 (2006) 647–651:
"*Test de repositionnement céphalique : étude de la stabilité de performance Cervicocephalic relocation test : a study of performance stability*"

1.5. 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.

1.6. Warnings and caution

Virtual Reality immersion is a powerful tool, particularly for stimuli that can induce sensory conflicts.

WARNING

These stimulations have the potential to cause certain disorders: Vasovagal syncope, epileptic seizures, migraines, vomiting, malaise, dizziness, syncope etc…

This type of rehabilitation needs to 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, it is VERY STRONGLY advised to place patients in a safe environment and to stay close to them throughout the session in order 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 the stimulation very gradually, after an initial short session to make sure of patients' tolerance to this type of stimulation.

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

WARNING

It is absolutely essential to stop the session when the first symptoms appear, usually "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 healthcare professional to "dose" the immersion so as not to provoke neurovegetative symptoms. This type of symptom can intensify in the hour following the session.

Virtualis declines any liability for any disorders suffered by patients during or after use of its 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)
- XBOX 360 Controllers

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

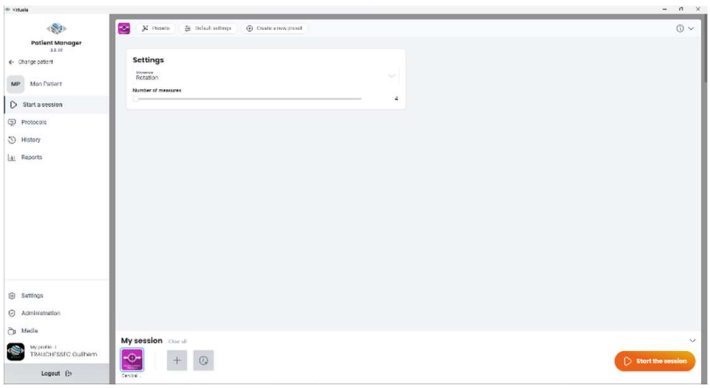
RAM
8 Go

2. Software use

2.1. Installing the patient

Use in the sitting or standing position.

2.2. Session settings



The variable settings for this module are as follows:

Choice of Movement

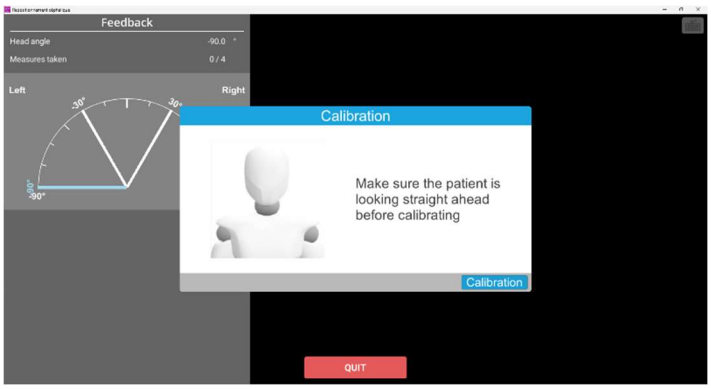
The type of movement “Rotation or Flexion – Extension” can be selected using the drop-down list.

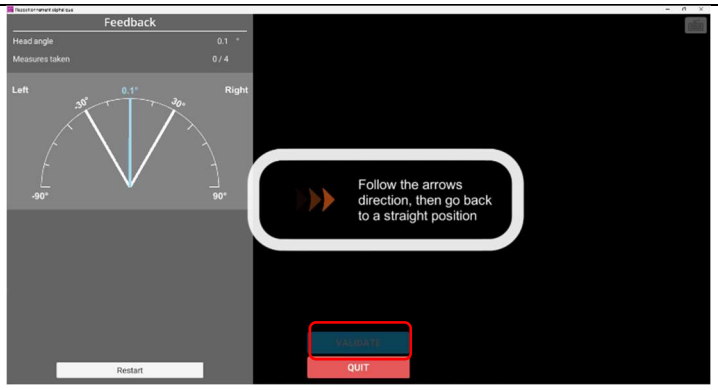
Number of measures

The number of measurements (maximum 24) can be selected by means of a slider.

2.3. Session

Once the presets have been defined, the user can launch the virtual interface by selecting the "Start session" button:





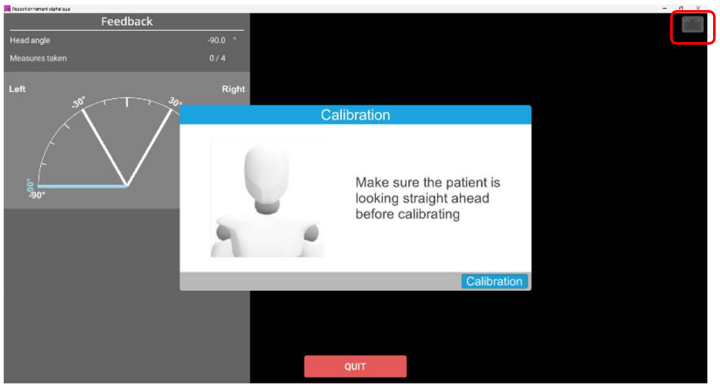
Start the 1st measurement, validate it (blue button circled in red on the screenshot above) and then move on to the next measurement.

All the indications required for the exercise are written inside the mask, so that patients can carry out the test on their own.

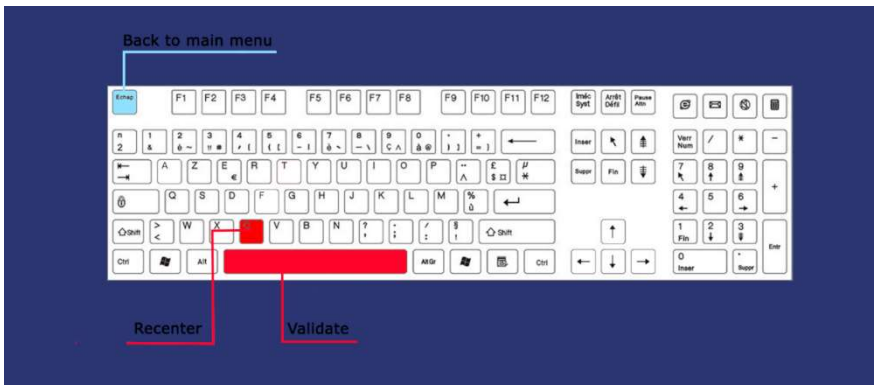
Patients rotate to the right or left and return to the initial position, with their head straight. When patients believe they have returned to the initial position, with their head straight, they validate the position by pressing Xbox controller A button. Practitioners can also validate the position indicated by patients using the mouse by simply clicking the "validate" button or appropriate keyboard shortcut (See Shortcut section).

2.4. Shortcuts

The keyboard and steering wheel shortcuts within the module, by clicking on the keyboard icon in the upper right corner of the screen.



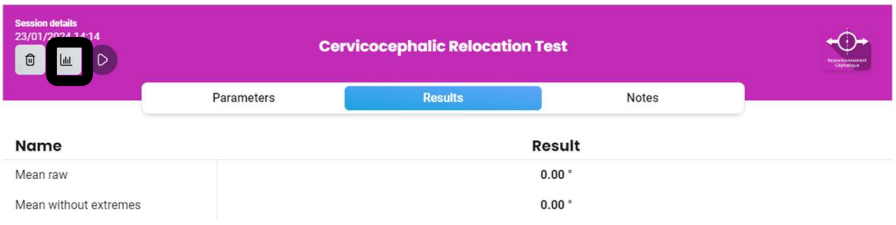
Keyboard:



Xbox controller:

2.5. Results

At the end of the assessment, the “Mean raw” and the “Mean without extremes” are available in the results:



All detailed measures data are available using the shortcut to edit reports (circled in black in the picture above).

2.6. Data processing

Data retrieval and analysis are carried out using the Patient Management software (see dedicated manual).