



REF **Catch The Ball**

CE Class I Medical Device

User manual

Distribution mode

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

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1. GENERAL

1.1. Description

Catch The Ball 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.

This is a functional rehabilitation software for the upper and lower limbs, reproducing a "goalkeeper" situation in which you can choose different environments.

1.2. Indications

This module trains motor coordination, joint amplitude, execution speed, visual information acquisition, reflexes, endurance, and inhibition.

1.3. Contraindications

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

1.4. Software field of application

Any musculoskeletal or neurological pathology of the limbs and spine.

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.





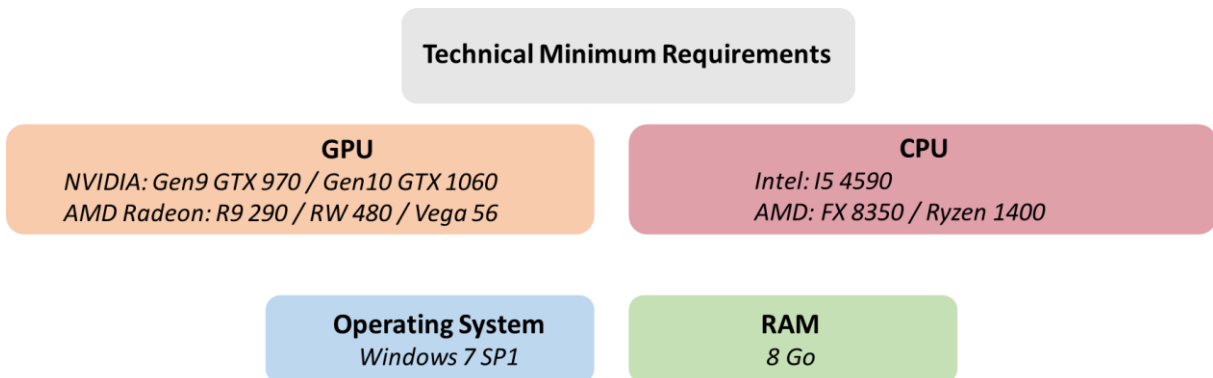
Any serious incident should be notified in writing to qualite@virtualisvr.com

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)

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, controllers and/or 1 to 4 trackers.

2. SOFTWARE USE

2.1. Patient setup

Use in a standing or seated position.

Press the « C » key on the keyboard to center the patient at the beginning of the session.

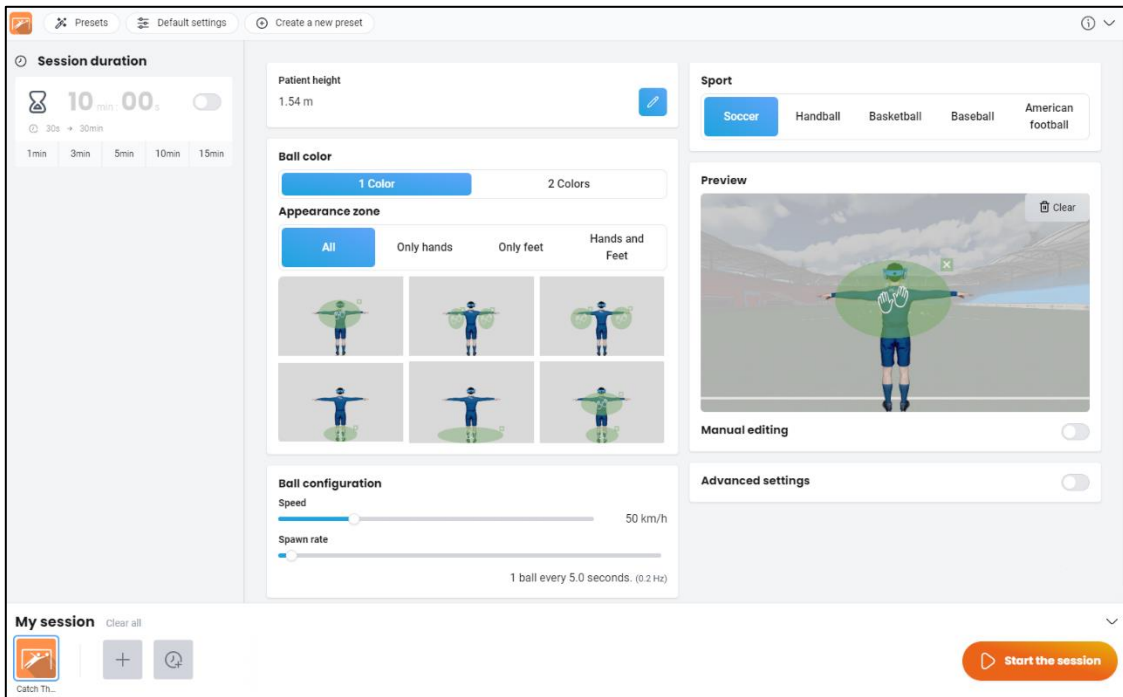




The patient can have 2 trackers strapped to their feet and/or 2 controllers in their hands.

In case of gripping difficulties, the controllers can be replaced by trackers strapped to the patient's limbs.

2.2. Session settings



The variable settings for this module are as follows:

2.2.1. Patient height

The height is used as a reference for the patient's resting position.

If a value was entered when the patient was created, it is automatically displayed.



If the field remains empty or equal to 0 when the session is launched, the following error message appears:



Wrong patient size. Please enter a size greater than 0.

Patient height

Height
0 cm

Save

2.2.2. Ball color and appearance zone

Ball color:

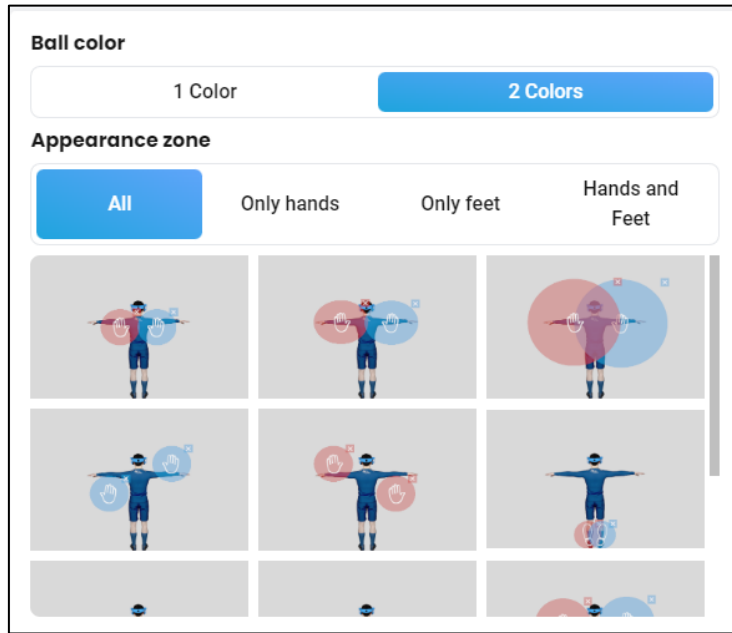
Ball color

1 Color 2 Colors

Appearance zone

All Only Hands Only Feet Hands and Feet



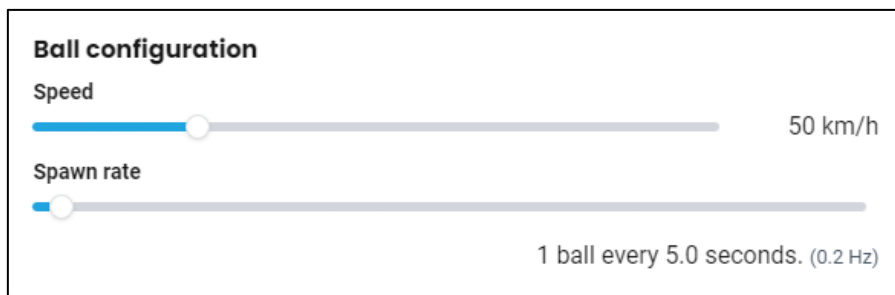


The balls can be one or two colors to differentiate movements from the left and right limbs.

Appearance zone:

Appearance zones can be the **hands**, the **feet**, **hands, and feet**, or **all** at once.

2.2.3. Ball configuration



Speed:

Used to modify the balls' speed.

Value: 5 to 200 km/h.

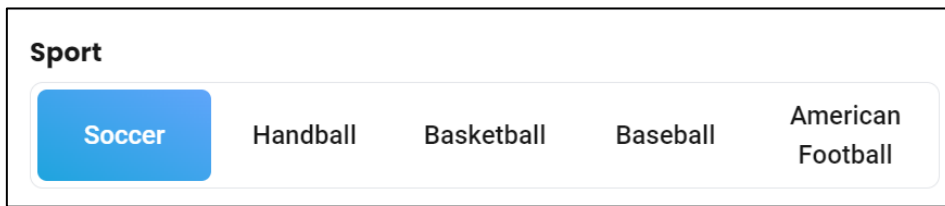
Spawn rate:

Value: 1 ball every 10.0 s to 5.0 balls per second.

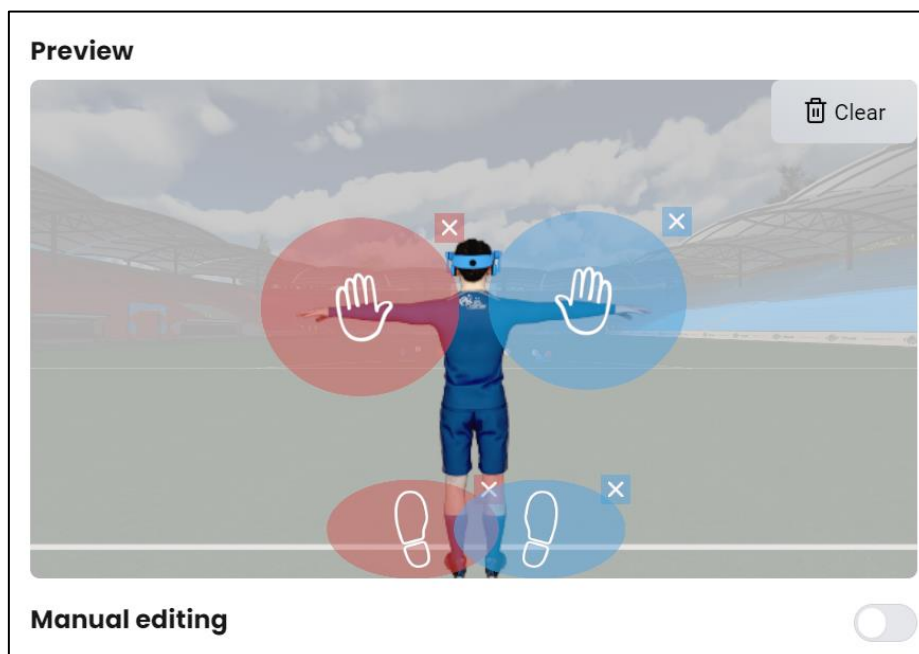




2.2.4. Sport

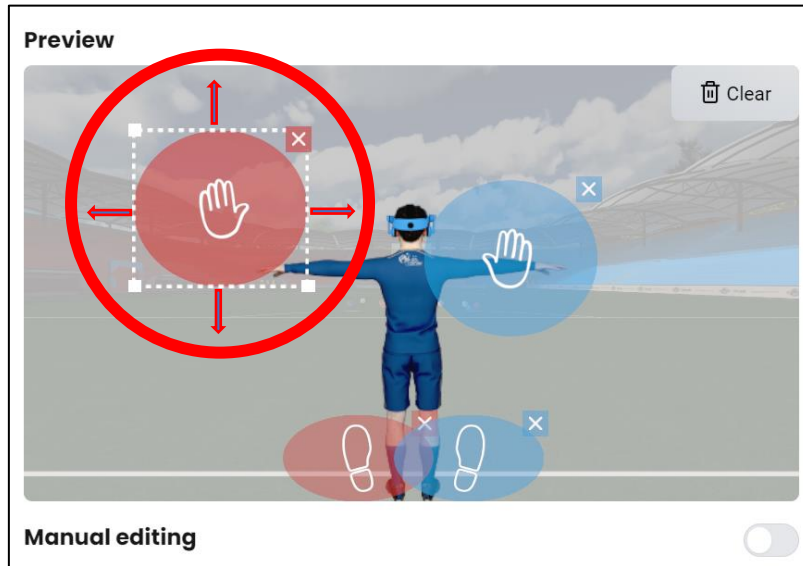


2.2.5. Preview

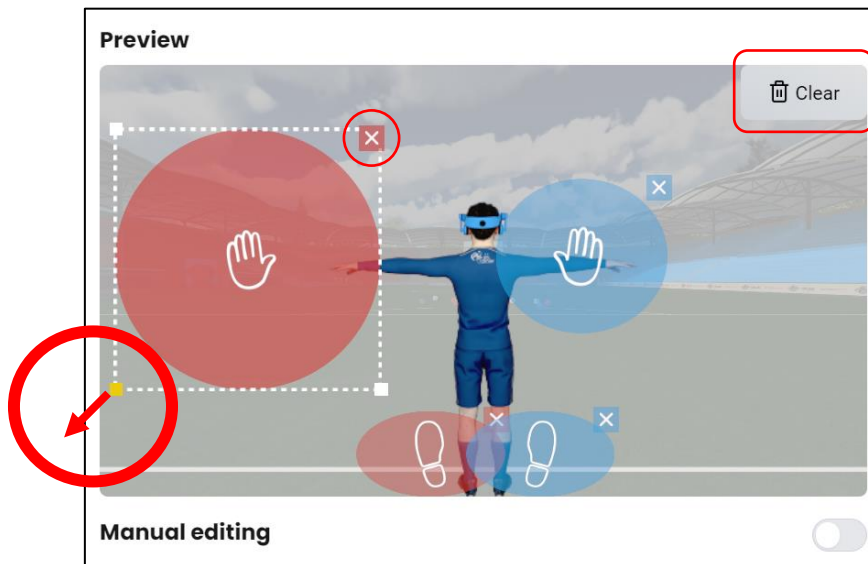


This preview area allows you to locate the areas towards which the balls will be thrown.





By hovering the mouse over the zones, you can move and position them depending on your therapeutic purposes. White dotted lines indicate that the selected zone is movable.

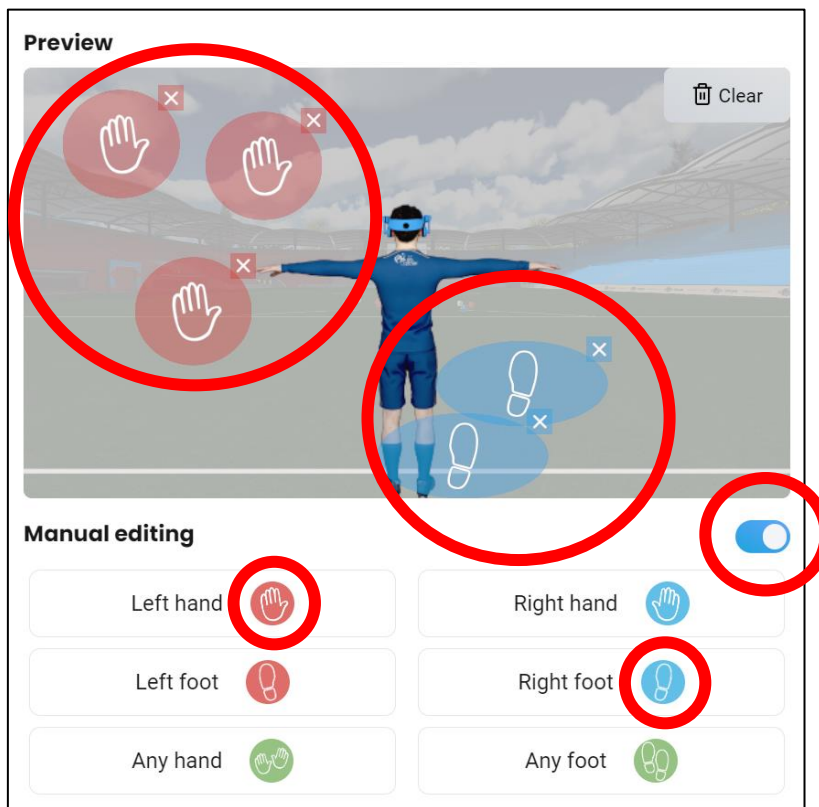


By clicking and dragging one of the corners, you can change the size of the selected zone. Click on the cross to delete the zone.

To delete all appearance zones, click on the "Clear" button.

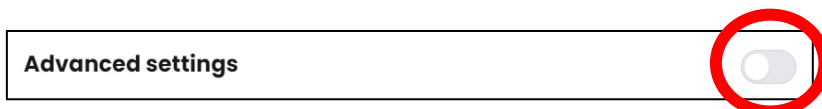
2.2.6. Manual editing






By choosing the "Manual editing" mode, you can add as many zones as you like.



2.2.7. Advanced settings








Advanced settings 



Launcher



Distance
 20 m 


Angle
 0° 

Balls to avoid
 10 %

Trajectory

Curvature of the parabolic trajectory
 50 % 

Lateral tilt
 13° 

Vertical/Lateral distribution
 50 %
More vertical balls More lateral balls

Visual effects

Visual aid

Ball rotation

Once the "**Advanced settings**" option has been activated, you can modify the following settings:

- **Launcher:**

- Distance: 10 to 30 meters.
- Angle: -50° to +50°.
- Balls to avoid: 0 to 90 %.

- **Trajectory:**

- Curvature of the parabolic trajectory: 0 to 100 %.
- Lateral tilt: 0 to 90°.
- Vertical/lateral distribution: appears if the lateral inclination is greater than 0. Value: 0 to 100%.

- **Visual effects:**

- Visual aid: can be enabled/disabled.

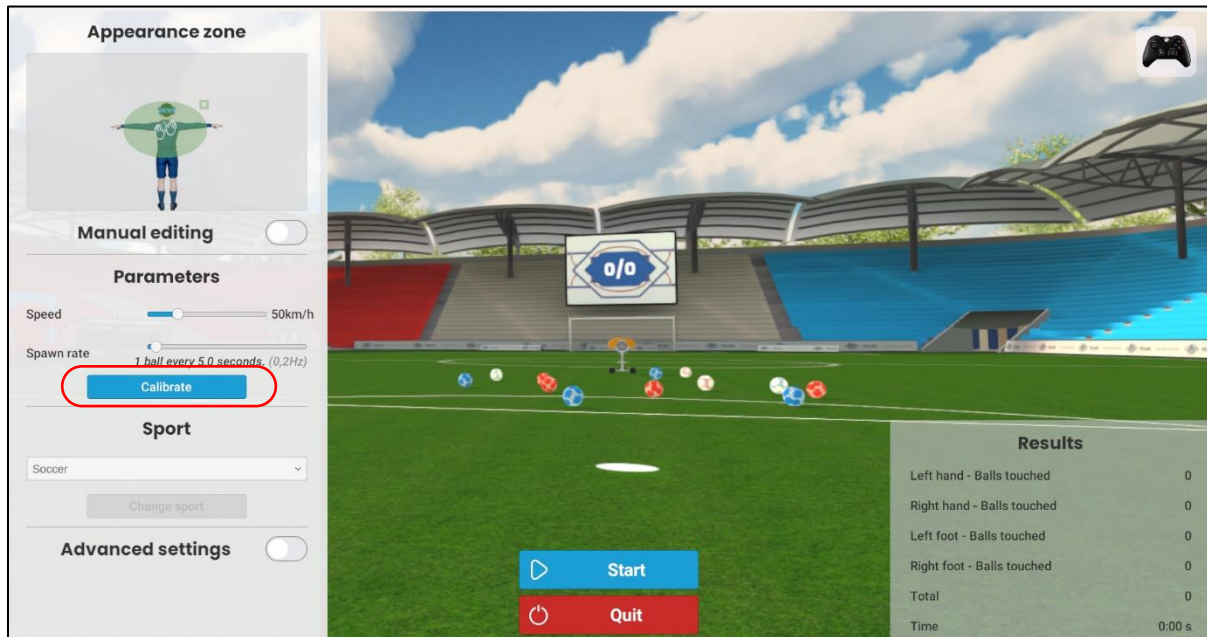




- Ball rotation: can be enabled/disabled.

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.



Click the « **Calibrate** » button in the left side of the screen to recenter the patient and calibrate the connected controllers and trackers.

Click the « **Start** » button to start the session.

User interface:





In the left side of the screen:

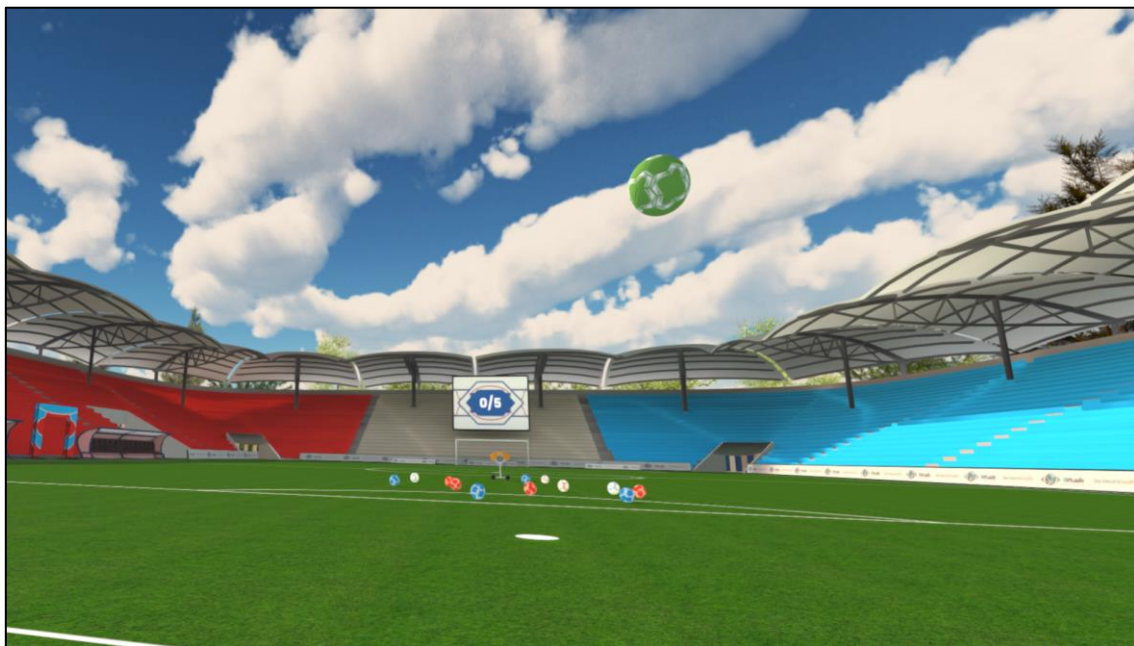
During the session, the practitioner can modify the settings. They are not visible to the patient.

In the bottom right of screen:

The practitioner can view the results of the session in real time: number of balls touched by each hand and by each foot, as well as the total score and the session's duration.

Patient interface:

The patient must stop the balls flying towards them using their hands and/or their feet.

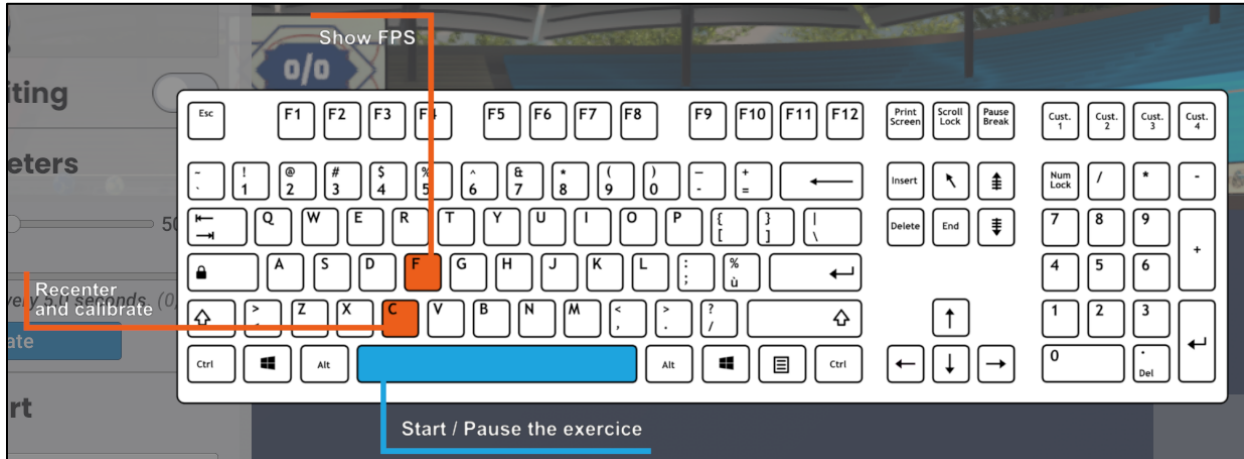




The patient can grab the balls by pressing the **controllers' trigger**.

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

2.5.1. Summarized results

By default, the results are as follows:

- Left hand - Balls touched
- Left hand - Balls missed
- Right hand - Balls touched
- Right hand - Balls missed
- Left foot - Balls touched
- Left foot - Balls missed
- Right foot - Balls touched
- Right foot - Balls missed
- Hands (combined zone) – Balls touched
- Hands (combined zone) – Balls missed
- Feet (combined zone) – Balls touched
- Feet (combined zone) – Balls missed
- Exercise success rate (%)
- Elapsed time.

2.5.2. Report and charts

Click on the histogram icon to access detailed results and the session report.

The screenshot shows the 'Catch The Ball' software interface. At the top, there's a header with 'Session details' (24/05/2024 10:10), the title 'Catch The Ball', and a logo. Below the header are three tabs: 'Parameters' (active), 'Results', and 'Notes'. A histogram icon is circled in red in the top left corner. The main content area is a table with the following data:

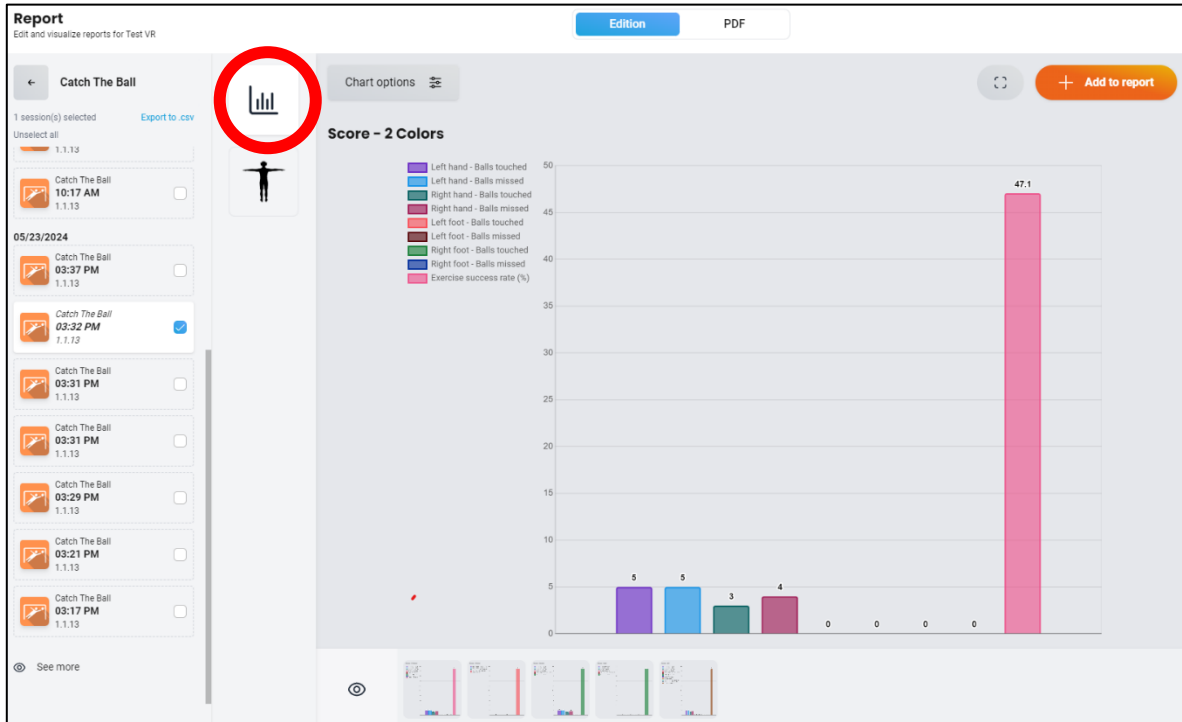
Name	Initial value	Final value
Sport	Soccer	Soccer
Speed	50 km/h	50 km/h
Spawn rate	0.20 Hz	0.20 Hz
Visual aid	✗	✗
Ball rotation	✓	✓
Balls to avoid	10.00 %	10.00 %
Lateral tilt	0.00 °	0.00 °
Vertical/Lateral distribution	50.00 %	50.00 %

At the bottom of the table, there are two buttons: 'Start session with initial values' and 'Start session with final values'.

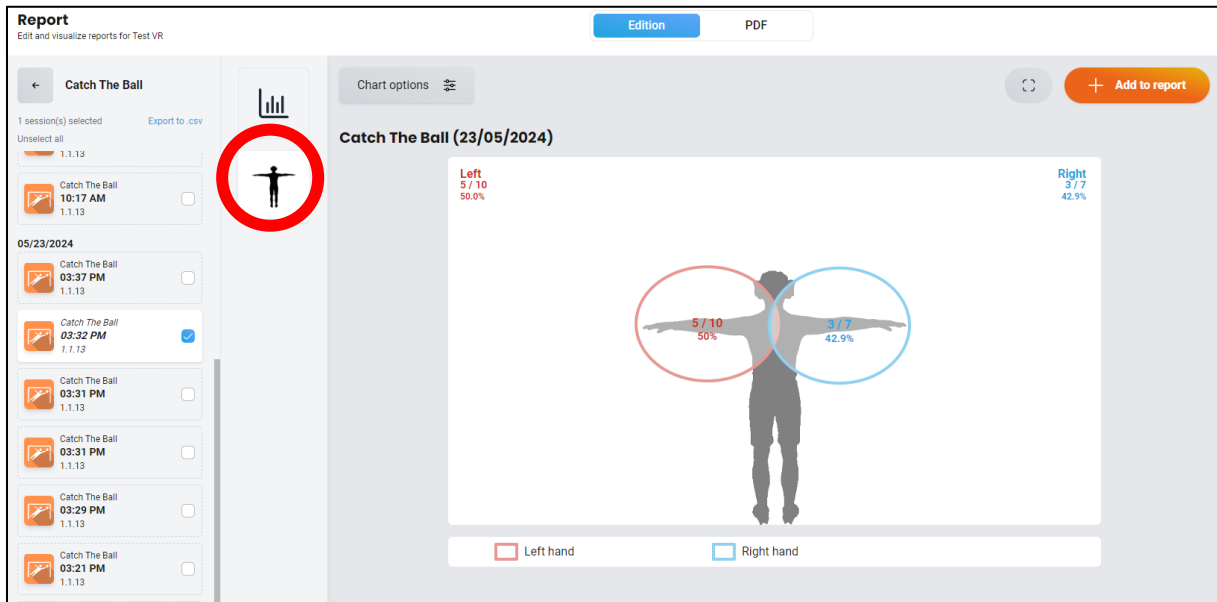




Several display modes are available for viewing results:



And:



You can access other results in "Graph options".

2.6. Data processing

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

