

CUREOSITY

Instructions for Physicians and Medical Professionals

CUREO[®] Software

For use with:
CUREO[®] BASIC, PROFESSIONAL, PREMIUM and CUREO[®] Session



Last revised on May 23, 2023



Preface and important information

Thank you for buying the CUREO® therapy system from CUREosity GmbH. These instructions apply to the CUREO® software starting with version 3.0xx. You can also download these instructions and those for previous versions from the customer portal on our website <https://www.cureosity.de/en/kunden-portal>, or you can request them from us.

Before you start using CUREO®, please carefully read the complete instructions, including all safety information.

Report any serious incidents (damages, injuries, infections, etc.) arising in connection with the product to the manufacturer and the responsible authority of the EU Member State in which you operate.

In Germany, the responsible authority is the Federal Institute for Drugs and Medical Devices (BfArM). You can find the current contact information on the BfArM website: <https://www.bfarm.de>.

If you have any questions about the contents of these instructions or the use of the product, please contact the CUREosity GmbH service:

<p>CUREosity Customer Service Burgunderstrasse 27 40459 Düsseldorf support@cureosity.de +49 211 82 20 46 96</p>	
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Manufacturer's contact information



CUREosity GmbH
Burgunderstrasse 27
40549 Düsseldorf
Germany
0049 211 82 20 46 96
service@cureosity.de
<https://www.cureosity.de/>

Distributor's contact information

- not applicable -



Contact information of the representative for Switzerland



Representative for
Switzerland
Johner Medical Schweiz
GmbH Tafelstattstrasse 13a
6415 Arth Switzerland

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1 Information on using these instructions

1.1 Explanation of symbols

Signal word/symbol	Description
	There is an immediately hazardous situation with a risk of serious harm or death.
	Possible hazard leading to serious harm or death.
	Possible hazard leading to minor or moderate harm.
	The flow of the therapy may be disrupted.
	Manufacturer
	Representative for Switzerland
	Distributor
	Usable until:

1.2 Typographical conventions in these instructions

Type	Description
[]	Square brackets indicate control elements within the software
<i>Italics</i>	Italics indicate cross-references within the instructions
Bold	Bold type indicates that these text passages are particularly important

1.3 Glossary

Term	Description
ADL	Stands for “Activities of Daily Living” and describes recurring activities that meet the basic physical and mental human needs, which may become difficult during illnesses and at an advanced age
Alias	Pseudonymised patient name
Avatar	Representative of one’s own body in virtual reality (VR) during therapy
Calibration	Necessary for the system to represent objects and visualisations in the virtual world in a correct position (for example, this makes it possible to depict an actually existing therapy table congruently in the virtual environment)

	<p>Calibration of the floor height: determines the value for the floor height in virtual reality to give patients a realistic image of their environment</p> <p>Calibration of the table (with the controllers): sets the centre of the game</p>
Controllers	Controllers for the hands (right/left) that make it possible to depict hand movements in VR therapy
Game mode	Determines how often and how a level is repeated
Gamification	The use of gaming elements in a non-gaming context to boost motivation
Headset	The VR headset is the training device that simulates a virtual environment for the user, enabling a realistic game experience (immersion)
Headstrap	The headstrap secures the VR headset on the user's head
Immersion	This refers to diving into the virtual environment to such a degree that the user perceives it as real
Menu bar	The top row in the therapist's view in which the settings can be adjusted
Module	<p>The software contains several training units that are assigned to different programmes; each of these programmes are subordinate to a module</p> <p>The software currently includes the following modules: active, moto, finger, cogni, daily, relax and activities</p>
Motion sickness	Discomfort caused by inconsistent information from visual perception in VR and the body's spatial perception
Router	The router uses an encrypted network to connect the VR headset with the tablet
Standalone software	<p>Free-standing software</p> <p>Here: the standalone software is the medical device that is distributed with dedicated accessories</p>
Screen	Monitor or tablet that is usually in front of the patient and provides explanations or information
Training	Game options of the individual programmes
VR	Virtual reality

1.4 Other accompanying documents and additional information

Material	Source
Quick guide	Enclosed with the system.
Video tutorials on the assembly and operation of the product	https://www.cureosity.de/kunden-portal

	The password must be requested from the service department.
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If you require additional help after a careful study of the instructions and supplementary information, please feel free to contact the service department.

1.5 Terms of use

Please observe the provisions of the contract for CUREO® systems concluded with you, your employer or hospital association.

Copyright notes, serial numbers and other markings used for programme identification may not be removed from the CUREO® system or changed.

CUREosity GmbH excludes its liability irrespective of the legal nature of the asserted claim, unless a guarantee was issued for the quality of the CUREO® system or individual components, or a flaw was fraudulently concealed.

This exclusion of liability is not applicable to claims for damages - regardless of the legal grounds - if CUREosity GmbH or its legal representatives or agents violated their duties with gross negligence or intent, nor to the mandatory no-fault liability according to law, e.g. pursuant to the product liability law.

1.6 Feedback on the instructions

Your opinion is important to us. Please feel free to tell us your wishes and criticisms regarding these instructions. We will analyse your feedback and take it into account for the next version of the instructions.

CUREosity Customer Service Burgunderstr. 27 40459 Düsseldorf support@cureosity.de +49 211 82 20 46 96		Feedback via contact form: or directly to: feedback@cureosity.de	
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2 Purpose

2.1 Medical purpose

CUREO® software for sensorimotor and cognitive VR therapy

The immersive VR therapy offers physical and occupational therapy exercises for the upper extremities and in the area of Activities of Daily Living (ADL) cognition. Thanks to gamification, multisensory and direct feedback, the patients receive playful training in the areas of attentiveness, body perception as well as motor and cognitive skills. In addition, guided breathing therapy exercises and stimulating landscapes encourage relaxation.

2.2 Clinical benefit / indications

Therapy with CUREO® can be used in order to

- increase the active range of motion of the upper extremity and/or the torso,
- improve responsiveness,
- extend the attention span,
- support hand-eye coordination,
- improve the ability to perform colour-shape classification,
- optimise the timing and precision of movement sequences,
- strengthen upper extremity movements against the gravitational force,
- boost memory,
- reduce cognitive impairment,
- communicate appropriate sequences of activities (incl. ADL),
- positively influence the patients' awareness of their bodies,
- promote long-term motivation,
- counteract the patient's postural instability,
- improve the quality of life.

2.3 Intended patient target group(s)

There are no gender or age restrictions. However, a minimum age of 12 is recommended for using the system. The CUREO® therapy itself does not require German or English language skills, but the patient must be able to understand simple instructions from the therapist.

2.3.1 Side effects and risk patients

⚠ CAUTION

In some patients, the CUREO® therapy may cause the following side effects:

- Motion sickness
- Headache and neck pain
- Impact injuries
- Fear of heights

For this reason, you should pay particular attention to patients with one of the following conditions to ensure that they are suitable for VR therapy:

- Tendency towards fractures or existing fractures
- Uncontrollable vital functions
- Epilepsy

- Loss of orientation regarding time, space, person (one's own identity) and the context (social and situational)
- Poorly managed/controllable (neuro-)psychological pathologies such as anxiety and panic disorders, psychoses, schizophrenia
- Acute exacerbation of neurodegenerative or inflammatory diseases of the central nervous system (e.g. Parkinson's, multiple sclerosis, Alzheimer's)
- Severe visual impairments that cannot be corrected and significantly constrain the use of a VR headset
- Inability to wear a VR headset
- IV line with ongoing infusion in the upper extremities
- Children under 12
- Patients with fear of heights
- Patients with weak neck muscles or migraine

If your patient experiences motion sickness, headaches or neck pain, you can take the following steps:

- Habituation of the patient to VR, for example with slow modules
- Interrupting the VR therapy by removing the headset and, if necessary, exclusion from VR therapy

2.3.2 Absolute contraindications

WARNING

Patients with the following conditions are not approved for CUREO® therapy:

- Open skin lesion or other damage and injuries in the relevant parts of the upper extremities and head (e.g. trepanations and condition after removing parts of the skullcap)
- Shoulder joint (sub)luxation or unacceptable pain in the shoulder joint
- Severe spasticity
- Severe spontaneous movements, e.g. ataxia, dyskinesia, myoclonic jerks
- Patients who are extremely confused, uncooperative and incapable of being guided
- Extremely severe cognitive deficits
- Uncontrollable epilepsy and seizures
- Severe visual impairments that cannot be corrected and rule out the use of a VR headset (e.g. full blindness)
- Forms of aphasia which impair speech comprehension to such an extent that verbal instructions are not possible
- Pronounced hypacusis or the lack of necessary aids to compensate for it
- Uncontrollable vestibular disease
- Acute migraine attack
- VR headset cannot be adjusted to head size
- Not enough strength in the neck muscles to wear the VR headset

2.4 Intended users

Therapy with CUREO® must be performed under the responsibility of professional therapists, physicians or comparable professionals in health care. Under the responsibility of a physician or therapist, the CUREO® therapy can be delegated to auxiliary staff

members if they have experience within the patient's medical context and were instructed in the CUREO® therapy for that patient.

 **WARNING**

The therapy must not be carried out by patients or anyone who is not an appropriately trained medical professional.

2.5 Intended duration of use

 **CAUTION**

For patients without contraindication, the use is limited to a maximum of 60 minutes. The duration of therapy must be shortened appropriately for patients with side effects or contraindications.

3 Using CUREO®

WARNING

When you use the supplied hardware, observe the instructions of the respective manufacturers.

WARNING

The CUREO® therapy system may not be modified by the user and must be operated with the supplied hardware.

3.1 Storage of the product before/after use and during transport

WARNING

Prevent your VR headset, tablet or the optional power bank from getting wet or coming into contact with liquids. Even if the hardware is dry and seems to function normally, the battery contacts and circuits can gradually corrode and pose a safety hazard.

NOTE

CUREO® and all components of the CUREO® system should always be transported vibration-free in the convenient carrying case.

NOTE

CUREO® must be used and stored at room temperature (corresponds to 15-35 °C) and a relative humidity of no more than 85%.

NOTE

The VR headset may not be placed in direct sunlight - note that the lenses of the VR headset can be damaged by sunlight.

NOTE

The optical system of the VR headset may not be soiled, scratched or covered.

NOTE

Avoid dropping the devices and accessories. Otherwise, there may be damage, especially if dropped on a hard surface. If you suspect that one or more components have been damaged, contact your service.

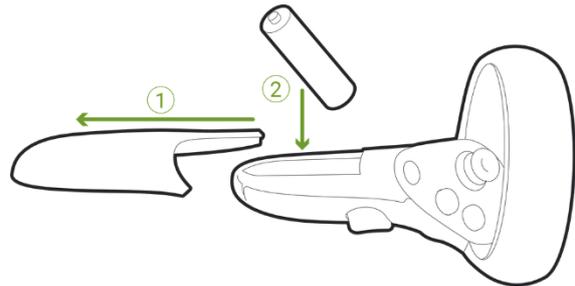
3.2 Charging and replacing the battery

3.2.1 Controllers

WARNING

Risk of explosion if the battery is replaced with an incorrect battery type.

If you want to replace the battery in the controllers, first remove the handle cover and then slide the exterior shell of the controller downwards as shown in the image. Remove the battery and replace it (type AAA). Follow the steps in reverse to reassemble the controller.



3.2.2 VR headset and tablet

⚠ DANGER

The VR headset and tablet are powered by a rechargeable battery. Please observe the following information on charging the VR headset and tablet:

- Do not try to charge or use the VR headset, tablet or optional power bank if you are unable to turn them on after trying to charge them, if the component gets unusually warm or if the battery compartment is swollen, leaking liquid or smoking.
- Always ensure that all devices are adequately ventilated while using or charging them. Covering the devices with materials that significantly impact the air flow can affect the performance and may pose a risk of fire or explosion.
- The headset may only be charged before and after the therapy, not during it.

⚠ WARNING

The user is **not** able to replace or repair the batteries in the VR headset, tablet and the power bank. Opening a device by force voids all warranty claims!

3.3 Maintenance and inspection

Service employees of the CUREosity company handle the servicing and maintenance of the hardware. If you notice a defect, please contact the service department at service@cureosity.de

3.4 Disposal

The hardware disposal is handled by your service or can be carried out by the customer in line with the electronic waste guideline. This does not include consumables and batteries, which the customer must dispose of properly in accordance with local regulations. If you would like to delete patient data before the disposal, you can find further information in the section *Handling patient data*.

4 Product description

4.1 Principle of operating the product and process overview

The CUREO® software is a standalone software that is used with dedicated hardware for VR therapy. With its accompanying immersion, the VR provides patients with a deep dive into a completely different world. In this world, the software provides motor, sensory and cognitive tasks as well as neuroregulatory exercises and relaxation techniques. While the completion of these tasks contributes to achieving the therapeutic rehabilitation goal, to the patients it seems as if they were playing a video game. The therapy can take place enriched or reduced environments and therefore individually adjusted to the patients. The process involves a device for the therapist to control the therapy, a training device for the patient and data transfer between the two devices. The full therapy control and the patient and therapist view are exclusively available on the therapist hardware. The training device (patient hardware) is limited to completing the therapy. In addition, an optional USB stick is available to store summary reports.

The CUREO® software is pre-installed and configured for the respective hardware operating system and purpose of use.

4.2 Configurations

Below is a general overview of the various system configurations and their included functions. After you boot up the VR headset, you can see which configuration is included on your device on the white startup screen. Your system is also designated with a label (BASIC, PREMIUM, PROFESSIONAL). BASIC stands for one of the configurations with the item number BC_, PREMIUM for the configuration PM_0123 or PM_01234_PT and PROFESSIONAL for the configuration PM_0123_PT-X.

Item number	Parametri-sation	Patient testing	Data export	Hand tracking & finger module	All new develop-ments
BC_0123	✓				
BC_0123_PT	✓	✓			
BC_0123_PT-X	✓	✓	✓		
PM_0123	✓			✓	
PM_0123_PT	✓	✓		✓	
PM_0123_PT-X	✓	✓	✓	✓	✓
PD_0123	✓	✓	✓	✓	✓

4.2.1 CUREO® Sessions

The option **CUREO® Sessions (PD_0123)** is intended exclusively for the outpatient sector. It allows for needs-oriented use and billing. The system scope corresponds to that of the **PM_0123_PT-X**. The session credit can be obtained at any time in our **CUREO® Sessions [online shop](#)**. You can select between four different card volumes:

The **Starter Package** with item number **CS_10_03** includes:
The **Beginner Package** with item number **CS_50_03** includes:

A (QR) code to activate 10 CUREO® sessions (for 100 minutes of therapy time)
A (QR) code to activate 50 CUREO® sessions (for 500 minutes of therapy time)

The Advanced Package with item number CS_100_03 includes:	A (QR) code to activate 100 CUREO® sessions (for 1000 minutes of therapy time)
The Master Package with item number CS_250_03 includes:	A (QR) code to activate 250 CUREO® sessions (for 2500 minutes of therapy time)

4.2.2 Changing the system version (BASIC - PREMIUM - PROFESSIONAL - Sessions)

If you purchased a “Basic” or “Premium” model and want to integrate the still missing features into your system, contact your sales representative to update the contract. Then you will be sent QR codes to activate the newly acquired features, which you can scan with the [Function and session settings] in the CUREO® application. You can find this in the main display in the top bar between the home icon and the gear icon. If you need any help, our service team will be glad to assist you.

4.3 Product life & remote update

The use of a CUREO® software version is limited to two years after the market launch. This is meant to ensure that the most up-to-date CUREO® software in the market is being used. You can find out the CUREO® software product life on the white startup screen during the therapy preparation process (see section *Preparing the therapy*). For this reason, it is important that you install a new CUREO® software update on your system within 3 months of its launch.

Software updates are implemented exclusively by the CUREosity service department. They can be installed on-site, by sending in the hardware, or remotely. As soon as new software versions or updates become available, CUREosity will contact you to schedule the update process under the terms of the service contract. The service department will instruct you on how to install the update. Under certain circumstances, it may be necessary to send your CUREO® system back to CUREosity. In such a case, the CUREosity service department will send you a shipping package. Please pack the entire system consisting of the VR headset, router, tablet and controllers in the corresponding case according to the enclosed instructions.

4.4 IT security

CUREO® saves settings of the therapy courses on the VR headset.

The VR headset and tablet components are connected to each other via an encrypted WLAN connection. No internet connection is required for the operation.

4.4.1 Requirements for the IT environment

The CUREO® system can be used on its own independently of any IT environment.

In version

3.XX,

CUREO® may not be connected to the Internet without prior instructions by CUREosity. In this version, only a connection via the provided router is permitted. This router only connects the tablet with the VR headset.

The tablets are protected by a PIN code. This may not be changed or forwarded without instructions from CUREosity.

4.4.2 IT security measures to be implemented

The network settings of the devices may not be changed without explicit instructions from CUREosity.

The PIN code must not be switched off, made accessible to unauthorised persons or changed.

The devices must be stored and charged in a secure location and may only be given to authorised personnel.

The settings of the provided hardware may not be changed without permission from CUREosity.

If CUREO[®] is connected to a WLAN via a network for maintenance or update purposes as per the instructions of CUREosity, the upstream LAN/WLAN network must guarantee the following security measures:

- Use of a firewall, virus scanner, anti-malware software, no port forwarding to the CUREO[®] hardware
- Secured WLAN access points that are at least WPA2-encrypted and protected by sufficiently strong passwords
- The settings of the provided hardware may not be changed without permission from CUREosity
- Neither the VR headset nor the provided tablet may be connected to a computer or any other device (e.g. via USB/WLAN/Bluetooth).
- The provided router may not be connected with a network other than the one intended for it. This applies to both a wireless and a wired connection (RJ45)
- Using the RJ45 network jack on the router is prohibited
- The WPS switch on the router must not be operated

4.4.3 Handling patient data

If you wish to send in CUREO[®] or delete patient data for another reason, you can do so directly in the software. Select the relevant patient entry in the [Patient selection] menu. Now select [Edit] and then [Delete] and confirm the query.

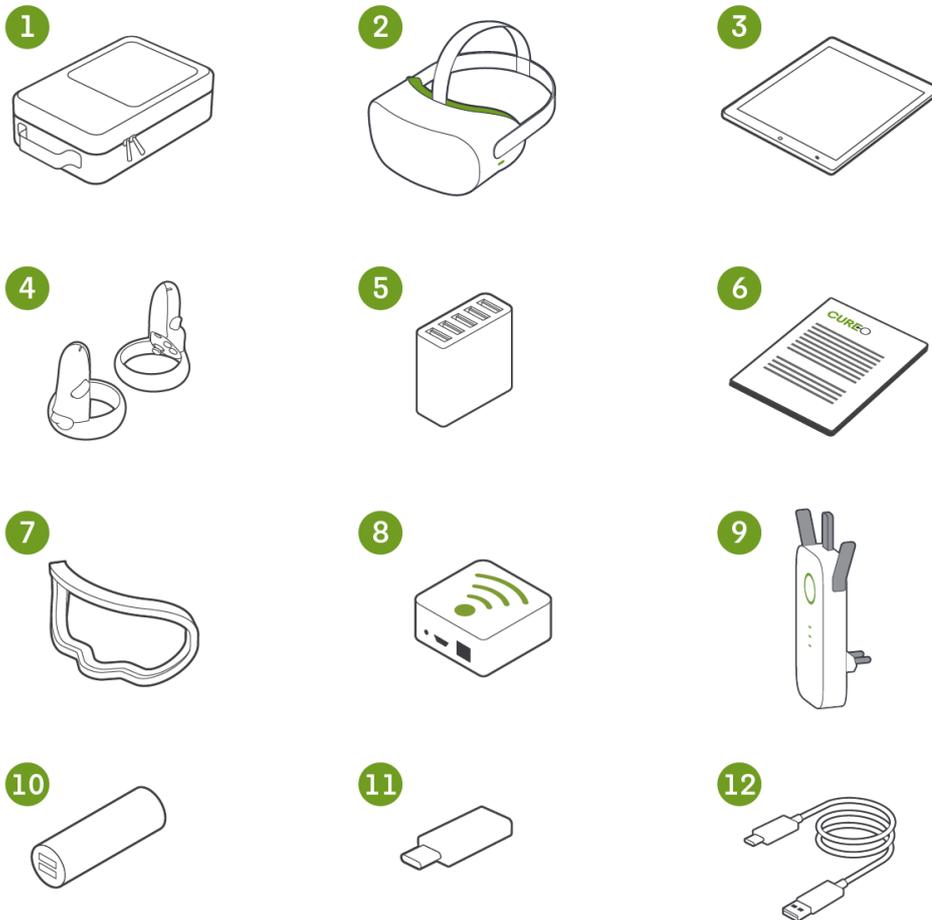
4.4.4 Dealing with lost or stolen authentication elements

If any authentication elements are stolen or lost, this must be reported immediately to the CUREosity service. The affected devices must be taken out of service so that CUREosity can re-establish secure access to them.

4.4.5 IT security problems and countermeasures

If the software or hardware behaves abnormally (e.g. no longer able to access the hardware, incorrect PIN, etc.), please notify the CUREosity service immediately.

4.5 Scope of delivery



No.	Package contents	Quantity
1	Case with fitted inlay for the CUREO® system	1
2	Enterprise VR headset with pre-installed CUREO® software	1
2	Battery headband for Enterprise VR headset	1
3	Android tablet with pre-installed CUREO® software and CUREO® instructions	1
4	Right controller incl. protective cover	1
4	Left controller incl. protective cover	1
5	Multi-USB charging adapter	1
6	Quick guide for the CUREO® system	1
7	Silicone protection with goggle spacer	1
8	Router incl. cable	2
10	Power bank - USB-A (optional)	1
11	USB stick type C (optional)	1
12	Charging cable type C - USB-A	2

4.6 Consumables

Item	Manufacturer - catalogue number	Required quantity
Disinfectant wipes (as per the hygiene regulations for electronic medical devices)	To ensure a long service life of our products or the provided hardware, we recommend the use of moist disinfectant wipes with a composition of no more than: 17.4 g propan-2-ol, 12.6 g ethanol (94% w/w), per 100 g active ingredient.	Consumables
Two AA batteries	N/A	One each per controller

Do not use wipes with chloride compounds or abrasive substances. Use only wipes that are gentle on the material.

4.7 Combination with other products

⚠ CAUTION

The VR headset, the tablet being used and the controllers contain magnets and components that emit radio waves, which could affect the function of nearby electronic devices. It is the attending doctor's decision whether the system can be used safely. Discontinue the use of CUREO® if you notice an interference with a medical device. For further information, please contact your service department.

⚠ CAUTION

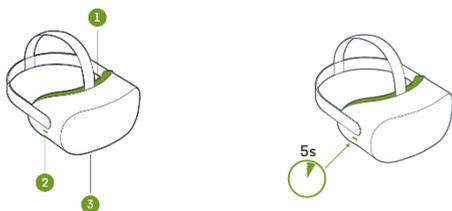
It is very important to weigh the risk of injury when medical aids or other therapy devices are used.

CUREO® can be combined with the traditional aids used in physical therapy. In addition, CUREO® can be used e.g. with personal aids, such as a wheelchair, corsages, etc.

4.8 Control elements of the hardware

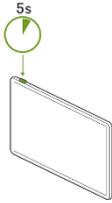
On the **VR headset**, you will find these controls:

- On/off switch (2) press for 5 seconds to operate
- Lens adjustment (1)
- Volume control (3)

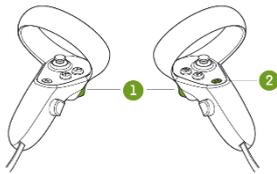


- On the **tablet**, you will find these controls:
 - On/off switch press for 5 seconds to operate

-
- Volume control

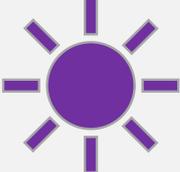


- You will find many control elements on the **controllers**. Only two of these are relevant:
 - Trigger button (1) Holding this down causes the virtual hand to form a fist
 - Menu button (2) Opens and closes the Oculus menu



4.9 Signals and displays

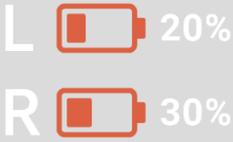
The meanings of the light indicators on the VR headset are explained below. The relevant light is on the right next to the on/off switch of the headset.

Display	Description	Meaning	Acoustic signal
	Continuously lit & white	The headset is started or switched on	 start signal
	Blinking & white	The headset is being shut down	 switch-off signal
	Blinking & violet	The headset is reset to factory settings	/
	Continuously lit & green	Battery is charged	/
	Continuously lit & orange	Battery is charging	/
	Continuously lit & red	Battery is low	/
	Nothing is lit	Device is turned off and battery isn't charging	/

The meanings of the light indicators on the controllers are explained below. The relevant light is in the centre of the controller's ring,

Display	Description	Meaning	Haptic signal
	Blinking & white	The controller is switching on	The controller vibrates once briefly

4.10 Battery indicator

Error signal, warning	Description	Meaning	Location
	Illuminated red battery icon next to L and R	Low battery level of the left and right controllers	Displayed after you tap on the headset icon (bottom right, also headset user interface).
	Illuminated red battery symbol next to headset icon	Low battery level of the headset	Displayed on the bottom right of the headset's user interface
	Illuminated white battery icon next to L and R	Adequate battery level of the left and right controllers	Displayed after you tap on the headset icon (bottom right, also headset user interface).
	Illuminated white battery icon next to headset icon	Adequate battery level of the headset	Displayed on the bottom right of the headset's user interface

5 Using the product

5.1 Notes before starting therapy

NOTE

The therapy should take place in a bright, evenly lit, closed and protected space. The therapy location must be free of light reflections or sharp contrasts caused by light and shadow. The therapy location should be clean with no objects or rough, uneven areas, and it should be level.

WARNING

Only use intact therapy devices.

CAUTION

Before starting the therapy, make sure:

- that your patient has no contraindication (see section *Intended patient target group(s)*)
- that you qualify as an intended user (see section *Intended users*)
-)
- that you have read the instructions, particularly the safety information

CAUTION

The patient cannot see freely and may also be prone to uncontrolled movements due to VR, or use an unexpectedly large range of motion due to instability. Before starting the therapy, you should therefore make sure that

- there are no objects within a radius of about 1.5 meters around the patient that could lead to impact or injury and
- that when you perform therapy on a real table, you always calibrate it in such a way that the patient can see it congruently in VR at all times and
- that you protect yourself, by staying outside of the patient's range of motion and
- that you protect the hardware (controllers and therapist tablet) by placing it outside of the patient's range of motion.

CAUTION

At any time - especially during therapy without a therapy table or while standing - ensure that the patient is sufficiently stabilised without any risk of falling.

NOTE

Adjust your communication with the patient to the fact that

- the patient is unable to perceive the outside world visually and you can only reach him or her through verbal or tactile communication and
- the patient receives additional audio-visual stimuli through the headset and hears not just you.

Depending on the patient, also explain that the hands in VR are represented as “healthy hands”.

NOTE

Before starting the therapy, check that the hardware is complete and that the therapy set fits together. You can recognise coordinated components by the imprinted serial numbers.

NOTE

Ensure that all hardware (VR headset, controller, tablet) is charged sufficiently for the duration of the entire therapy before starting.

5.2 Preparing the therapy

5.2.1 Positioning the patient

The therapy can be performed while lying down, sitting or standing, as long as there are adequate safety and fall prevention. However, position the patient as upright as possible (positioning in a sitting bed for patients who are bed-bound). There must be enough free space for movement at any time. If necessary, a therapy table can be used.

5.2.2 Establish the connection

NOTE

Never unplug the router while the therapy is still ongoing.

NOTE

Do not use both routers at once.

NOTE

It is important to look into the headset in the beginning so that the safety notice displayed at the beginning disappears and the CUREO® app can start.

1. When you are preparing the system, always start by **first** connecting one of the two routers to the power supply. You can either plug the large stationary router into an electric socket or connect the small mobile router to the power bank.
2. Now start the tablet and headset. Both devices take some time to boot up.
3. Remove the lens cover from the headset and look inside until you see the blue start environment.
4. Unlock the tablet and open the CUREO® app. After a few seconds, an entry [CVC-] with your system number will appear. Click on [Connect].

If no entry appears after one minute, step 3 was not completed adequately. Continue looking into the headset until you see the blue landscape.

If you do not see a landscape and instead see:

- 3 dots = wait a little longer because the system is still loading
- Power-off menu = press “cancel” with the controllers or power down the headset manually and restart it
- [Waiting for Wifi] = the headset was unable to find a router. Turn everything off and start again from step 1.

5.2.3 Calibration

Correct calibration is required to represent the following items realistically:

- Distance from the patient's head to the floor and from this the avatar's posture (sitting, kneeling, standing)
- Centre of the playing area

The calibration is performed by using the headset and controllers and is maintained throughout the therapy. If needed, however, the centre of the playing area can be moved again later (see section *Centre of playing area*). Recalibration can also be performed at any time (see section *Overview of main menu*).

Below you will find step-by-step instructions:

CAUTION

Make sure that the patient is in an adequate sitting position that can be maintained for the following therapy (lying down, sitting, standing). If your patient changes position during the therapy, recalibration is required, otherwise objects in the VR environment are placed incorrectly in relation to your patient. Without recalibration, the therapy is impaired and the risk of impact and falling increases significantly.

Step 1: Calibration of the floor height

- Hold the switched-on VR headset close to the ground.
- Press [Set floor position].
- On the tablet, check that the floor height has been captured correctly.
- Set aside the headset at the usual height.

If the floor height was already calibrated correctly, this step can be skipped by pressing the [Skip] button.

Step 2: Setting up your patient

See section *Set up / select patient*.

Step 3: Put the headset on the patient

See section *Putting the headset on the patient*.

Step 4: Calibrating the centre of the playing area

1. On the tablet, select whether the therapy will take place with or without the therapy table. You should only choose the option [Without Table] if there is no table in front of your patient in reality.
 - No table (possible while sitting and standing):
2. Make sure that the [Without Table] button is activated.
3. Check whether the controllers are displayed on the tablet as soon as you move them into the headset's field of view.
4. If you do not see a controller, press a button on that controller and move it until it vibrates.
5. Now ask the patient to hold the controllers in front of his or her chest by bending the elbows 90° and placing them sideways against the body. The controllers may also be held in place by an assistant. If patients are bedridden,

-
- the controllers can be placed next to each other on the bed cover. It is important that the patient is in the centre between the controllers.
6. Press the trigger button on both controllers.
 7. After the calibration has been completed correctly and is verified, press [Start] on the tablet to confirm the calibration.
- With table:
 2. During a calibration, make sure that the [With Table] button is activated.
 3. If necessary, adjust the depth of the table to be calibrated via the [Table Depth] button. Place the controller on the front edge of the table so that the patient is in the centre between the controllers.
 4. Make sure that the controllers are in the field of view of the headset.
 5. While the controllers continue to rest on the table, press the trigger button on both controllers.
 6. Check whether the displayed table is represented correctly in terms of position and size and whether both controllers (red and blue) are displayed on the tablet. If this is not the case, you can reset the corner points of the table as many times as you want by pressing the relevant trigger buttons until the table is represented correctly.
 7. Ask the patient whether the virtual table is displayed correctly. If not, the calibration must be repeated.
 8. After the calibration has been completed correctly and is verified, press [Start] on the tablet to accept the calibration.

Frequent sources of errors during calibration

- Poor lighting conditions: the room in which you use the system may not be too dark nor too brightly lit. Absolutely avoid direct sunlight!
- The batteries in one of the controllers may be dead.
- The controllers have been placed on an uneven surface.
- The line of sight between the headset and controllers is constrained or concealed.
- There are reflective surfaces like mirrors in the headset's field of view.

5.2.4 Putting the headset on the patient

The headset is put on during the calibration process. To do this, follow these steps:

- Fold up the bracket and use the rotary knob to open the headset as far as possible.
- Place the headset in front of the patient's eyes and bend the bracket downward.
- If possible, allow the patient to move the headset into place until it fits comfortably and he or she can see sharply in the foreground.
- Use the hook-and-loop fastener to secure this position of the headset.

If it is not possible to create a sharp view, remove the headset again and adjust the lenses manually to fit the lens distance to the spacing of the patient's eyes. You can do this by simply pushing the lenses in the headset together/apart.

5.2.5 Set up / select patient

NOTE

Please ensure that the real name is not used as an alias (pseudonymised patient data) and that every alias is unique. In each case, the data on the therapy progression are currently stored under an alias and exclusively on the VR headset being used.

NOTE

The patient alias may only be used for one patient. This is absolutely necessary for the appropriate settings of the patient size, gender and individual reports about their skills or relative scores.

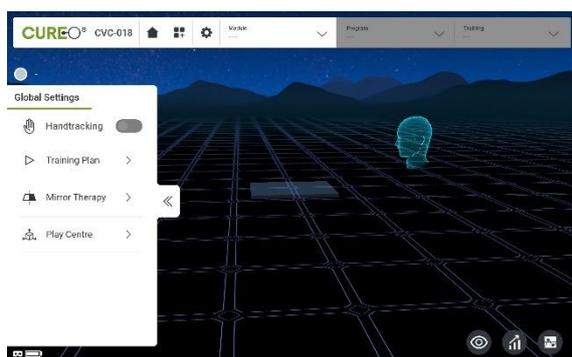
If you have already set up your patient in CUREO®, you can use the search field to find and select the patient's alias. If you would like to edit it, you can do so after selecting it via the [Edit] field.

If you want to set up a new patient in CUREO®, you can start this process via [Add patient].

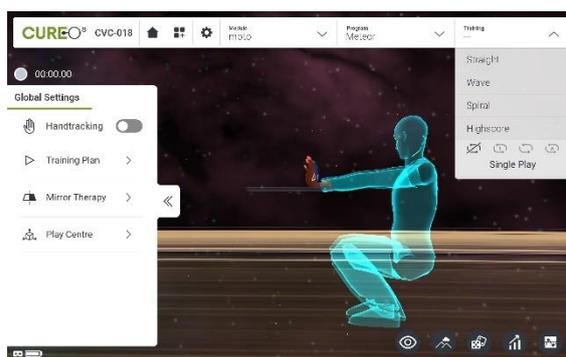
5.3 Overview of main menu

Below you will see the main menu of CUREO® **before** (left) and **after** (right) selecting a module and programme. You will also find a table with all functions/settings that can be used before/after selecting a programme.

CUREO® main menu **before** selecting a module and programme



CUREO® main menu **after** selecting a sample module and programme



Functions before the selection	can be found under	
Find the device number	CUREO® →	(next to this on the right)
Recalibrate the playing area	🏠 →	Calibration
Recalibrate the floor height	🏠 →	Calibration → ① (next to logo)
Select new patient	🏠 →	Patient Selection → Add patient
Edit current patient	🏠 →	Patient Selection → Edit
End therapy	🏠 →	End Therapy

Activate additional functions (e.g. hand tracking)				
Adjust overall volume of the headset		→	Sound	→ General
Adjust the volume of the music from the headset		→	Sound	→ Music
Adjust the volume of the (feedback) voices from the headset		→	Sound	→ Voicelines
Adjust the volume of the sound effects from the headset		→	Sound	→ Sound Effects
Set the language for therapist and patient		→	Language	
Find the current CUREO® version		→	Info	
Find the device number		→	(next to this on the right)	
Switch view: to patient perspective				
Switch view: to outside perspective				
Retrieve results of the patient test		→	Results of the patient test	
Retrieve game results		→	Game results	
View real-time motion analysis				
Play/create/edit training plan		→		(more under <i>Training plan</i>)
Switch on mirror therapy		→		(more under <i>Mirror therapy</i>)
Move playing area		→		(more under <i>Centre of playing area</i>)
Functions after the selection			Can be found under	
Customising settings of the current game			(more under <i>Setting the difficulty level</i>)	
Change background landscape				
Switch hand tracking on/off		→		(more under <i>Hand tracking</i>)

5.4 Overview of the CUREO® software modules and programmes

Module	Programme
<i>active</i>	See Shapes Free Butterfly
<i>moto</i>	Meteor Draw Shapes

	Hotwire Fruitgarden Taiko
<i>finger</i>	Balloons Blocks & Shapes ADL Cube
<i>cogni</i>	ToyBlock Memorics
<i>daily</i>	Kitchen
<i>relax</i>	Sonification Breathing Light Dome Butterfly Enjoy View
<i>activities</i>	Kite Archery Woodchopping Qi Gong Skipping Stones Beach ball Paper plane

5.4.1 active

Concentration and spatial perception are trained in the [active] module. Patients interact with the game elements solely by moving their heads. Accordingly, this is carried out without controllers. This module is suitable for familiarising a patient with VR therapy as well as for severely impaired patients, for example in early rehabilitation.

See Shapes

In the [See Shapes] programme, patients have to recognise a butterfly in open space and guide it along a specified outline using eye contact. The shape to be trained can be decided by selecting the training ([Horizontal], [Vertical], [Triangle], [Square], [Circle]).

With the following settings, you can adjust [See Shapes] individually to your patient: [Size], [Accuracy], [Inverse].

Free Butterfly

There are two training options in the [Free Butterfly] programme: [Follow] and [Control]. In the [Follow] training option, patients are asked to recognise a butterfly in open space and follow it with their eyes. The patients' viewing direction is visualised by a circle that moves analogously to the eye movement. In the [Control] training option, patients are also asked to recognise the butterfly in the open space, but then guide it to a flower via eye contact. A small arrow on the circle indicates the direction in which the flower can be found.

With the following settings, you can adjust [Free butterfly] individually to your patient: [Width], [Height], [Balance], [Tempo].

5.4.2 moto

In the [moto] module, the therapy focuses on the motor training of the upper extremity and torso. Depending on the severity of the impairment, it is possible to select programmes that are played at the table level (no training against gravity) or in open

space (training against gravity). Also, depending on the programme, additional focus can be placed on the timing or precision of the movements.

Meteor

In the [Meteor] programme, patients must catch approaching meteors by touching them (it is not necessary to actually catch them or press the trigger button on the controllers). The colour (and shape) of the catching hand must match the colour (and shape) of the meteor to be caught. The selection of the training decides which way the meteors should fly towards the patient:

[Straight]	Meteors fly in a straight line towards the patient
[Waves]	Meteors fly towards the patient on a winding, twisted path
[Spiral]	Meteors fly towards the patient on a spiral path; the patient must use his or her hands to trace the spirals until they end

The [Highscore] training option is an exception. In highscore mode, the current game settings are the basic setting in which the highscore mode is started. Depending on the patient's performance starting with this basic setting, the difficulty level is further increased or reduced during the highscore training round. Here **all** game settings are adjusted to the performance level and all training options and trajectories (straight, waves, spiral) are played according to the performance level.

With the following settings, you can adjust [Meteor] individually to your patient: *[Width], [Height], [Balance], [Tempo], [Hand/Fist], [Asteroids]*.

Draw Shapes

In the [Draw Shapes] programme, patients are asked to guide an insect on the path to its destination by using their hand. The shape traced by this path can be decided by selecting the training ([Horizontal], [Vertical], [Triangle], [Square], [Circle]).

With the following settings, you can adjust [Draw shapes] individually to your patient: *[Width], [Depth], [Accuracy], [Game mode], [Active hand], [Inverse], [Synchronous]*.

Hotwire

In the [Hotwire] programme, an insect collects food on its way, which makes it move faster. If it strays from its path, it slows down again. The direction in which the insect moves is controlled by the patient's hand movement.

With the following settings, you can adjust [Hotwire] individually to your patient: *[Depth], [Tempo], [Play mode], [Active hand], [Inverse], [Portrait mode]*.

Fruitgarden

In the [Fruitgarden] programme, the patients are asked to pick fruit from the branches of a tree. Then the fruit must be placed in the appropriate basket according to their colour and shape.

With the following settings, you can adjust [Fruitgarden] individually to your patient: *[Size], [Height], [Auto grab]*.

Taiko

In the [Taiko] programme, the patients sit in front of a variably adjustable number of drums. Elements flying towards the patients must be smashed on the drum as soon as they

are centred exactly above it. To hit the elements at exactly the right time, the patients can focus on the rhythm. The Taiko programme trains the upper extremity and reactions.

With the following settings, you can adjust [Taiko] individually to your patient: [Drum amount], [Distance], [Extra Cue Chance], [Tempo], [Game mode], [Active hand], [Inverse].

5.4.3 finger

The [finger] module uses hand tracking (without controllers) to train the fine motor skills of the hands.

Balloons

In the [Balloons] programme, the movements of a fist closure and pincer grip are trained. Here a coloured balloon is created on the inside of the hand. The task is to crush this until it bursts, either between the finger of the same colour and thumb (this trains the pincer grip) or between the finger of the same colour and the palm of the hand (this trains the fist closure). Multicolour balloons are to be crushed with all fingers.

The settings of [Balloons] are explained further *below*.

Blocks & shapes

In the [Blocks & forms] programme, the task is to sort the shapes lying around into the appropriate container. Which shape is to be grasped and sorted can be decided by selecting the training ([Cube], [Triangle], [Cylinder], [Star], [All Forms]).

With the following settings, you can adjust [Blocks & shapes] individually to your patient: [Size], [Active hand].

ADL cube

In the [ADL cube] programme, a series of fine motor tasks - similar to everyday movement patterns - await the patient. Tasks include, for example, pressing buttons, flipping switches, turning knobs and many others. The task must be grasped intuitively. If this fails, the patients have the option of getting assistance in the form of a short voice message via the blue question mark button. They can also skip the current task via the green whistle button. With the exception of high score mode, the patients have unlimited time to solve the tasks. However, if [Highscore] training is selected in the training options, the patient must solve as many tasks as possible in one minute.

With the following settings, you can adjust [ADL cube] individually to your patient: [Random], [Auto Skip].

5.4.4 cogni

In addition to motor skills, the [cogni] module mainly trains cognition. The focus is placed particularly on colour-shape recognition and the allocation of colours, shapes and letters.

ToyBlock

In the [ToyBlock] programme, the patients must sort the various blocks according to colours and shapes and sort them into the appropriate containers.

With the following settings, you can adjust [ToyBlock] individually to your patient: [Auto Grab].

Memorics

In the [Memorics] programme, a sequence played by piano keys is provided, which the patients have to remember and then play from memory. The keys can be displayed all in the same colour or in different colours. It is also possible to display letters on the keys, so that playing them in the correct order forms a word.

With the following settings, you can adjust [Memorics] individually to your patient: *[Word Length]*, *[Tempo]*, *[Game mode]*, *[Words]*, *[Color]*, *[Mixed]*.

5.4.5 daily

The [daily] module enables the patients to train everyday skills and independence in safe, virtualised day-to-day environments.

Kitchen

In the [Kitchen] programme, the patient sits in a virtual kitchen. Depending on the training selection, the focus can be on [Washing], [Cutting] or [Grilling].

In the [Washing] training, patients must get the vegetables shown on their screen from the refrigerator and wash it until they have no more dirt. The screen in front of the patients also provides information or warnings (for example, that the refrigerator door was left open).

In the [Cutting] training, patients must chop the vegetables with a knife from the knife block and then place them into the provided dish. The screen in front of the patient displays into how many pieces the vegetables should be cut. If the piece placed in the dish is too large, an alert with a red cross appears. Then the patient can return the vegetable to the cutting board and chop it a little smaller.

In the [Grilling] training, patients must fry the specified vegetable slices. To do this, the pan must be placed on the switched-on cooker. After the vegetables have been placed in the pan, they first have to be fried on one side. A display with a countdown appears above the vegetables. Once the countdown has ended, the vegetables have to be turned (ideally with the spatula). While the other side of the vegetable slice is frying, the countdown starts again. When the second countdown is over, the vegetables must be taken from the pan and placed in the dish. If the vegetables are fried for too long, they will char and the task needs to be repeated.

With the following settings, you can adjust [Kitchen] individually to your patient: *[Amount]*, *[Guidance]*.

5.4.6 relax

In the [relax] module, patients can unwind from their training unit by immersing themselves in multisensory landscapes. They can enjoy beautiful views in the displayed nature setting, practice breathing techniques as well as visualise and sonify their physical movements so as to positively influence their awareness of their bodies.

Sonification

In the [Sonification] programme, the movements of the upper extremities are visualised and sonified. This makes it possible to experience the upper extremity in a multisensory way (auditory, visual, pallesthetic). This real-time sonification of the movements can also be combined well with mirror therapy.

Breathing

In the [Breathing] programme, patients can use breath visualisation to become aware of and train their breathing. The patients can also optionally use their hands to control the visualisation.

With the following settings, you can adjust [Breathing] individually to your patient: *[Inhale Time]*, *[Pause after inhale]*, *[Exhale Time]*, *[Pause after exhale]*

Light Dome

In the [Light Dome] programme, the patient is in a soothing room whose colour he or she can change as desired. To change the colour, the patient must reach for the ball in front of him or her and move it inside the room. The movement of the ball then changes the colour of the room.

Butterfly

If the [Butterfly] programme is selected, the patient can observe it while flying. In addition, the patient can hold a hand straight in front of him or her to attract the butterfly onto the hand. Then the butterfly can also be viewed up close.

Enjoy View

If you select the [Enjoy View] programme, the patient can explore the selected landscape and leisurely look around. You can find the landscape settings to choose from on the bottom right. When you open these settings, a window with all currently available landscapes is shown. You can select any landscape to switch to it. Patients can take photos in any landscape if you select [Take Photos] as the training. This gives the patient the option to reach for the camera and use the red shutter button to take a photo of the landscape. A subsequent look in the kitchen will show the recorded photos pinned to the refrigerator.

5.4.7 activities

In the [activities] module, patients can experience short activities by immersing themselves in multisensory landscapes.

Kite

The [Kite] programme lets patients fly a kite. The handles of the kite can be grasped by keeping the trigger button held down on the controllers. Now the kite can be guided by moving the arms. The training units [Let it fly], [Practice] and [Highscore] can be selected.

The [Let it fly] training is ideal to become familiar with controlling the kite. Here the patient can fly the kite freely.

In the [Practice] training, there are also clouds that must be collected with the kite. As soon as the kite touches a cloud, a large cloud ring is created. The patient must pass the kite through this again in another approach to collect even more points. If the patient flies through several rings within a short time span, each additional traversed ring will yield 10 additional points. This effect can be repeated up to ten times so that the patient can get up to 100 additional points.

The [Highscore] training is a challenging variant of the programme. The patient must fly through as many clouds (and thereby collect points) as possible within one minute. The acquired points and remaining time are displayed on a black board on the patient's right side.

With the following settings, you can adjust [Fly a kite] individually to your patient:
[Tempo], [Auto Grab], [Thunderclouds].

Archery

In the [Archery] programme, patients can train their aim and practice shooting. The bow must be held in one hand while the other hand pulls back the bowstring. Then an arrow is displayed on the bow, which is shot at the target by releasing the arrow. The training units [Practice] and [Highscore] can be selected.

In the [Practice] training, the patient can become familiar with the mechanics of archery. The currently achieved score is displayed.

In the [Highscore] training, a countdown starts. After that, the patient has 10 arrows to use. Arrows that are still available lean against the score board. After the arrows have been shot, the patient sees the achieved score.

With the following settings, you can adjust [Archery] individually to your patient:
[Guidance].

Woodchopping

In the [Woodchopping] programme, patients can chop wood in a meadow or at a lake. To do this, the axe must be picked up, and then the log must be struck.

With the following settings, you can adjust [Woodchopping] individually to your patient:
[Auto grab].

Qi Gong

In the [Qi Gong] programme, patients have Qi balls on their hands with which they can practice throwing. There is a choice of two training units ([Gong], [Lampions]). In the [Gong] training, the display above the gong shows how many times it must be hit until it changes its position. The [Lampions] training is similar to throwing cans. The lanterns are stacked in a formation and must each be struck repeatedly to be removed from it. When all the lanterns have been hit, the formation reassembles in another area.

Skipping Stones

In the [Skipping Stones] programme, the patients are next to a lake. On a small table next to them, a stone appears that can be picked up and tossed into the lake. If it is thrown on the water surface at a sufficiently flat angle, the stone will skip several times across the surface before sinking.

Beach ball

In the [Beach ball] programme, patients sit on the beach and can toss a beach ball across the net. To do this, the ball must be grasped and picked up by pressing the trigger button on the controllers. During the throw, the trigger button must be released at the right moment so that the virtual hand lets go of the ball and it can be thrown over the net. If the ball makes it over the net, our friendly dolphin will bounce it back over. If the ball does not fly over the net, it will soon appear again in front of the patient. Once the ball is in play and has been returned by the dolphin, it can simply be thrown back over the net again - there is no need to operate the controller's trigger button for this.

Paper Plane

In the [Paper Plane] programme, the patient can pick up a paper airplane and make it fly. The paper airplane will slowly descend through the landscape until it is too far away or hits an object. Then the paper airplane re-appears on the table and can be thrown again.

5.5 The therapy process

5.5.1 Starting the therapy

NOTE

If your patient has no VR experience yet, offer your patient a comfortable start by choosing a simple programme or using the relax module. For more information about the various modules and programmes, see section *Overview of the CUREO® software modules and programmes*.

To start a training, follow these steps:

- Step 1: select the desired module
- Step 2: select the desired programme
- Step 3: select the desired training option
- Step 4: select the desired repeat mode

Explanation of repeat modes:

After you have selected the desired training option, your training is started. A training round usually takes 60 seconds or until the patient has completed the task (except the high score option: about 2:15 minutes or until the task is completed). By setting the repeat modes, you determine what happens after the current training round is finished:

- **[Single play]:** After finishing the current round, the application is returned to neutral start mode and no further training option is started.
- **[Single Loop]:** After finishing the current round, the current training option is repeated and starts from the beginning.
- **[Loop Mode]:** After finishing the current round, the next training option in the drop-down list is started. When the last training option in the list has been played, the first one is started again (loop mode).
- **[Auto Mode]:** In auto mode, the patient's performance in the current round determines which training and which difficulty level are started in the next round. Depending on the performance, the requirement is automatically increased or reduced in the next round. Auto mode adjusts **all** available game settings.



However, if you only want a single setting to be automatically adjusted to your patient's performance, you have the option of switching back to Loop Mode and set individual difficulty sliders into an automatically adjusting mode.

Of course you can also start a new round manually at any time (even if the current round has not been completed yet) by tapping the desired training option again.

5.5.2 Setting the difficulty level

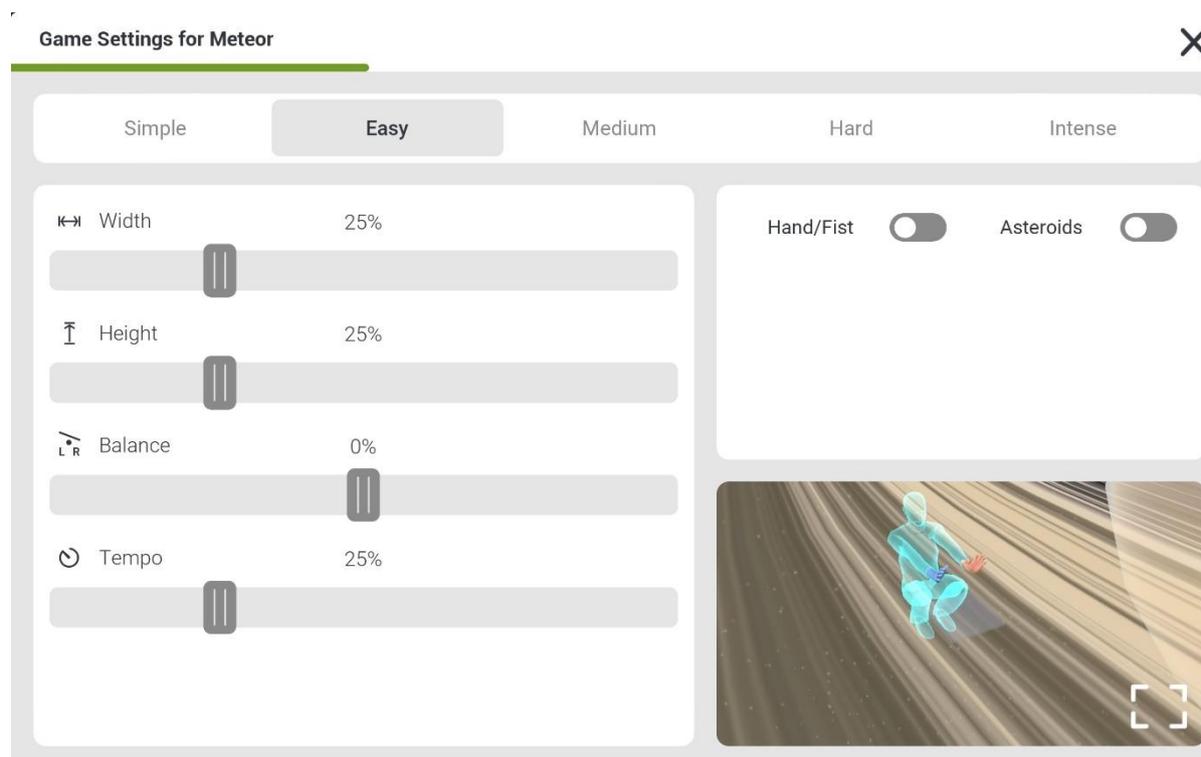
CAUTION

The therapy must be adjusted to the patient's individual indications and impairments as well as his or her current performance (on the day).

CAUTION

The requirements may only be increased gradually when the therapy with the current settings can be carried out safely by the patient and meets the expectations.

The difficulty of most programmes can be adapted to the patient. If you are playing a programme with your patient for the first time, the difficulty level is at the default setting. If you have already played the programme with your patient, the last game settings were saved automatically.



To change the difficulty level, the programme-specific sliders (e.g. height, width, speed, etc.) can be set manually as desired. In addition, the programme-specific play options (e.g. which hand is used, whether the grasping is automatic, whether directions of movement are inverted, etc.) can be switched on and off manually to adjust the game as precisely as possible to the patient's abilities.

One alternative to avoid having to move every slider individually is to use the suggested difficulty presets in the top bar. As soon as one of the presets is chosen, all sliders are automatically adjusted in line with the preset title (Easy, Medium, Difficult, etc.). However, please keep in mind that the presets only affect the sliders and not the game options.

If you have adjusted the game setting, this adjustment is only applied to the subsequent training round. This has the advantage that you can adjust the settings at your own pace without disturbing the patient during the current round. Your setting changes are stored automatically once you click on the [X] on the upper right or in the preview on the bottom right.

If you would like the changes to be effective immediately without waiting for the next

training round, you can start the next training round manually by tapping on the desired training option again.

All game settings that are included in the CUREO® software are explained in alphabetical order (per column) below. Only the settings of the [Balloons] programme are explained separately in the section *below*.

Sliders (in CUREO® on the left side)	Game options (in CUREO® on the right side)			
<p>[Distance]</p> <p style="text-align: center;">0% ←————→ 100%</p> <p>Minimum distance between drums Maximum distance between drums</p>	<p>[Active hand]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">L</td> <td style="width: 33%;">LR</td> <td style="width: 33%;">R</td> </tr> </table> <p>The game is set up for the use of the left hand The game is set up for the use of both hands The game is set up for the use of the right hand</p>	L	LR	R
L	LR	R		
<p>[Amount]</p> <p style="text-align: center;">1 ←————→ 3</p> <p>Minimum amount of ingredients (kitchen) Maximum amount of ingredients (kitchen)</p>	<p>[Asteroids]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>Only meteors fly towards the patient, which must be caught Asteroids also fly towards the patient, which must not be caught</p>	Off	On	
Off	On			
<p>[Balance]</p> <p style="text-align: center;">0% ←————→ 100%</p> <p>Only the left half of the body is trained Only the right half of the body is trained</p>	<p>[Auto Grab]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>To grasp something, the trigger button of the controller must be pressed and held To grasp something, the virtual hand must touch the virtual object</p>	Off	On	
Off	On			
<p>[Width]</p> <p style="text-align: center;">0% ←————→ 100%</p> <p>Minimum reach to the left and right Maximum reach to the left and right</p>	<p>[Auto Skip]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>The subtask is shown until it is solved The subtask is automatically skipped after some time if it is not solved</p>	Off	On	
Off	On			
<p>[Accuracy]</p> <p style="text-align: center;">0% ←————→ 100%</p> <p>High error tolerance for a successful completion Low error tolerance for a successful completion</p>	<p>[Color]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>All keys are monochrome All keys are colourful</p>	Off	On	
Off	On			
<p>[Size]</p> <p style="text-align: center;">0% ←————→ 100%</p> <p>Minimum width & Minimum height/depth Maximum width & Minimum height/depth</p> <p>In Caterpillar game mode (on table level), the width and depth of the playing area are adjusted. In Butterfly game mode (in the air), the</p>	<p>[Mixed]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>Objects are played in the order from left to right Objects are played randomly, without order</p>	Off	On	
Off	On			

width and height of the playing area are adjusted.				
<p>[Guidance]</p> <p>0% ←————→ 100%</p> <p>The trajectory is not displayed The entire trajectory and the arrow's impact area are displayed</p>	<p>[Thunderclouds]</p> <table border="1"> <tr> <td>Off</td> <td>On</td> </tr> </table> <p>Only regular, blue clouds appear that need to be flown through Black thunderstorm clouds also appear, which should not be flown through</p>		Off	On
Off	On			
<p>[Height]</p> <p>0% ←————→ 100%</p> <p>Minimum reach to the top Maximum reach to the top</p>	<p>[Hand/Fist]</p> <table border="1"> <tr> <td>Off</td> <td>On</td> </tr> </table> <p>The meteors are considered caught as soon as they are touched The meteors are only considered caught when they are touched with the indicated hand position (fist or open hand)</p>		Off	On
Off	On			
<p>[Pause after inhale]/ [Pause after exhale]</p> <p>0 ←————→ 6</p> <p>Minimum pause time (in seconds) after inhaling/exhaling Minimum pause time (in seconds) after inhaling/exhaling</p>	<p>[Guidance]</p> <table border="1"> <tr> <td>Off</td> <td>On</td> </tr> </table> <p>After the introductory tutorial, the patient must remember the individual steps to the solution The next step to the solution is indicated via a marker on the relevant object</p>		Off	On
Off	On			
<p>[Tempo]</p> <p>0% ←————→ 100%</p> <p>The task is performed with maximum slowness The task is performed with maximum speed</p>	<p>[Inverse]</p> <table border="1"> <tr> <td>Off</td> <td>On</td> </tr> </table> <p>The playing direction is not changed The game is played in the opposite direction</p>		Off	On
Off	On			
<p>[Depth]</p> <p>0% ←————→ 100%</p> <p>Minimum reach to the front Maximum reach to the front</p>	<p>[Portrait mode]</p> <table border="1"> <tr> <td>Off</td> <td>On</td> </tr> </table> <p>Horizontal alignment of the game Vertical alignment of the game</p>		Off	On
Off	On			
<p>[Drum Amount]</p> <p>1 ←————→ 3 (5 in Butterfly)</p> <p>Minimum amount of drums (Taiko) Maximum amount of drums (Taiko)</p>	<p>[Game mode]</p> <table border="1"> <tr> <td>Caterpillar</td> <td>Butterfly</td> </tr> </table> <p>No movement against gravity necessary (playing area on table) Movement against gravity necessary (playing area in the air)</p>		Caterpillar	Butterfly
Caterpillar	Butterfly			

<p>[Word Length]</p> <p style="text-align: center;">3 ←————→ 5</p> <p>Minimum number of letters Maximum number of letters</p>	<p>[Synchronous]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>If both hands are used [LR], the directions of movement are opposite If both hands are used [LR], the directions of movement are the same</p>	Off	On
Off	On		
<p>[InhaleTime]/ [Exhale Tim]</p> <p style="text-align: center;">2 ←————→ 8</p> <p>Minimum time span (in seconds) for inhaling/exhaling Maximum time span (in seconds) for inhaling/exhaling</p>	<p>[Words]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>No letters are displayed on the keys Letters are displayed on the keys</p>	Off	On
Off	On		
<p>[Extra Cue Chance]</p> <p style="text-align: center;">0% ←————→ 100%</p> <p>Only regular drumbeats (rhythmic with the same time interval) are required High likelihood that additional drumbeats are required between the regular drumbeats</p>	<p>[Random]</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Off</td> <td style="width: 50%;">On</td> </tr> </table> <p>All subtasks are played in the same order All subtasks are played randomly, without fixed order</p>	Off	On
Off	On		

As mentioned above, the **settings in the [Balloons] programme** differ from the settings just described. In general, the fist closure or the pincer grip can be trained in Balloons.

If the fist closure should be trained, the option on the left screen side must be set to [Palm]. In the displayed hand, it is now possible to select the balloons that will be shown to the patient during the next round. If you select the small, round balloons in the hand, the upcoming game will feature balloons which the patient should crush with just one finger. If you select the large, elongated balloons in the hand, the upcoming game will feature colourful balloons which the patient should crush with the entire hand or all fingers.

If the pincer grip should be trained, the option on the left screen side must be changed to [Finger]. Here you can also select the balloons that will appear during the next round. To unlock even more options for placing the balloons, it is also possible to **deactivate** the option [Balloon on thumb] on the right side of the screen.

5.5.3 The training process

Once you have made all the desired settings, your patient can start with the training. An explanatory video is shown to the patient at the start of every training session. If you would like to skip this, just tap the training option again. If you are using controllers for the therapy and your patient has to perform a grasping motion with a hand, this can be done by your patient operating the trigger button on the respective controller (see section *Control elements of the hardware*). If your patient is unable to properly perform the grasping with the trigger button, many games will give you the option to activate [*Auto Grab*] in the game settings. Alternatively, you can switch to hand tracking mode in some of the games (see section *Hand tracking*).

5.5.4 End training option

There are two ways to end a training option:

- If you would like to immediately cancel a training round in progress, tap [END] in the training drop-down (displayed under the repeat modes). Your patient will stay in the training environment, but the training will be discontinued.
- If you would like to let the patient finish the current training round and only end the training option afterwards, switch to repeat mode [Single repeat].

5.6 Advanced (global) settings

The information listed so far is sufficient to successfully start the CUREO® therapy and carry it out with your patient. All of the information that follows briefly describes the additional features of CUREO® that can make your therapy even more individual and efficient.

All advanced settings are located in the [Global Settings] window. This is on the left edge of the screen and can be expanded or minimised.

While the game settings mentioned so far only affect the currently selected training, the global settings are stored and applied in all programmes from then on, even if the modules are switched. Once a global setting has been changed, a circle with the respective symbol of the modified setting appears next to the window. These indicators provide an overview of which of the global settings were adjusted and are now applied to the remaining therapy unit in modified form.

The global settings include the following features:

- *Hand tracking* (not included in CUREO® Basic)
- *Training plan incl. Patient testing and export (optional)*
- *Mirror therapy*
- *Centre of playing area*

All features of the global settings are explained in more detail in the following subchapters.

5.6.1 Hand tracking

NOTE

Pronounced pareses, spasticity, general malpositions of the hand as well as gloves or other objects attached to the hands that distort the natural shape of the hands can result in erroneous depictions of the hands.

NOTE

If the patient performs the pincer grip for more than 0.5 seconds in the patient's direction, a circle appears that fills within 1-2 seconds. Once it is completely filled, the menu of the VR goggles appears and the CUREO® therapy is interrupted. You can return to the CUREO® application by pressing the key with the flat o of your right controller once (see section *Control elements of the hardware*).

NOTE

Hand tracking mode is not suitable for therapies in which the hands interact with each other (e.g. touching, crossing the fingers of both hands), since this can cause the movement to be represented incorrectly. Similarly, hand tracking mode is not suitable

for large (fast) movements outside the field of view; here, too, the movement cannot be captured and displayed correctly.

NOTE

When you switch from controllers to hand tracking, make sure that you place the controllers out of the patient's reach.

NOTE

In hand tracking mode, parts of the virtual hand may appear to be penetrating virtual objects. Inform the patient of this technical limitation, or switch to controllers if this interferes with the therapy.

While some programmes are controlled exclusively with hand tracking (e.g. [Finger] module) and other programmes exclusively with controllers (e.g. [Daily] module), there are many programmes that can be controlled with both hand tracking and controllers (see table). In these programmes, operation with controllers is preset as the default setting. If you would prefer to use the programme with hand tracking, you can switch it on (and off again) via the hand tracking setting.

To switch on hand tracking,

- a module and a programme must be selected and
- the controllers must be placed on a level surface and may no longer be moved. This is the only way for the controllers to switch off and for hand tracking to be recognised as the input method.

To switch from hand tracking back to controllers, the hand tracking setting must be turned off again. The controllers must also be switched on again. You can do this by moving the controller and pressing the trigger button - repeatedly if necessary (see section *Control elements of the hardware*). When a controller vibrates briefly, it is switched on again.

In programmes that are controlled exclusively with hand tracking / controllers, the hand tracking setting is blocked and cannot be changed.

Module	Programme	Head	Controllers	Hand tracking (optional)
active	See Shapes	✓		
	Free Butterfly	✓		
moto	Meteor		✓	✓
	Draw Shapes		✓	✓
	Hotwire		✓	✓
	Fruitgarden		✓	✓
	Taiko		✓	
finger (optional)	Balloons			✓
	Blocks & Shapes			✓
	ADL Cube			✓
cogni	ToyBlock		✓	
	Memorics		✓	
daily	Kitchen: Washing		✓	
	Kitchen: Cutting		✓	
	Kitchen: Grilling		✓	
relax	Sonification		✓	
	Breathing	✓	✓	

	Light Dome		✓	
	Butterfly		✓	
	Enjoy View	✓	✓	
activities	Kite		✓	
	Archery		✓	
	Woodchopping		✓	
	Qi Gong		✓	✓
	Skipping Stones		✓	
	Beach ball		✓	
	Paper plane		✓	✓

5.6.2 Training plan

WARNING

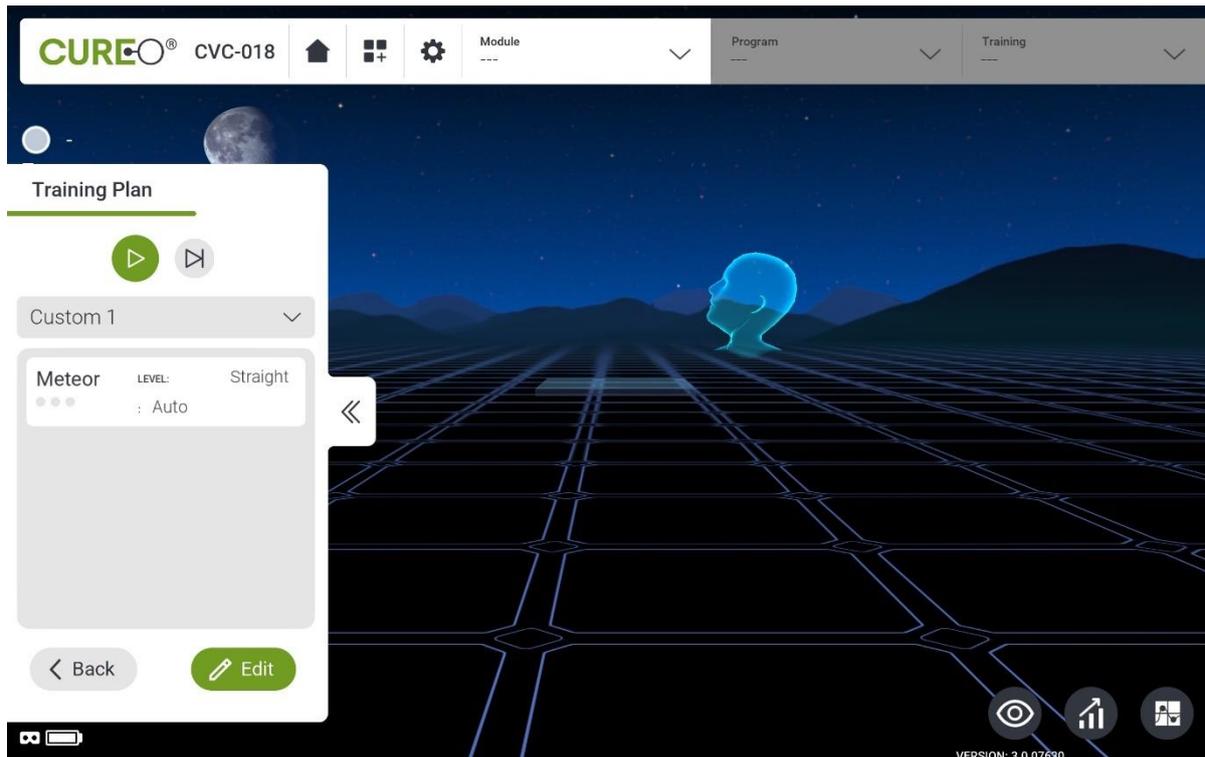
Even if a prepared training plan is followed, the therapist/doctor assumes responsibility at all times and must meet his or her supervisory obligation.

The training plan enables you to plan a therapy (in advance). Here you can specify with which programme the training should be performed and how often or for how long, and which programmes should follow. Relaxation units in the landscapes can be integrated in the same way. The respective game settings can be made either manually or determined through auto mode.

Play the existing training plan

In the drop-down menu, you can see all the training plans that were already set up on this device. You can select one of these plans by tapping on it, and then you will be shown a preview of the included programmes. The preview will show you the games, the level, the number of repetitions and the respective game settings.

To start the training plan, click on the start icon. When a training plan has been started, the main user interface and menu are disabled. Now you only have the option of stopping the training plan via the [Stop] icon or skipping the current game (by using the skip icon in the global settings window). The display informs you of the next game (also in the global settings window) and the estimated remaining time of the current training plan.



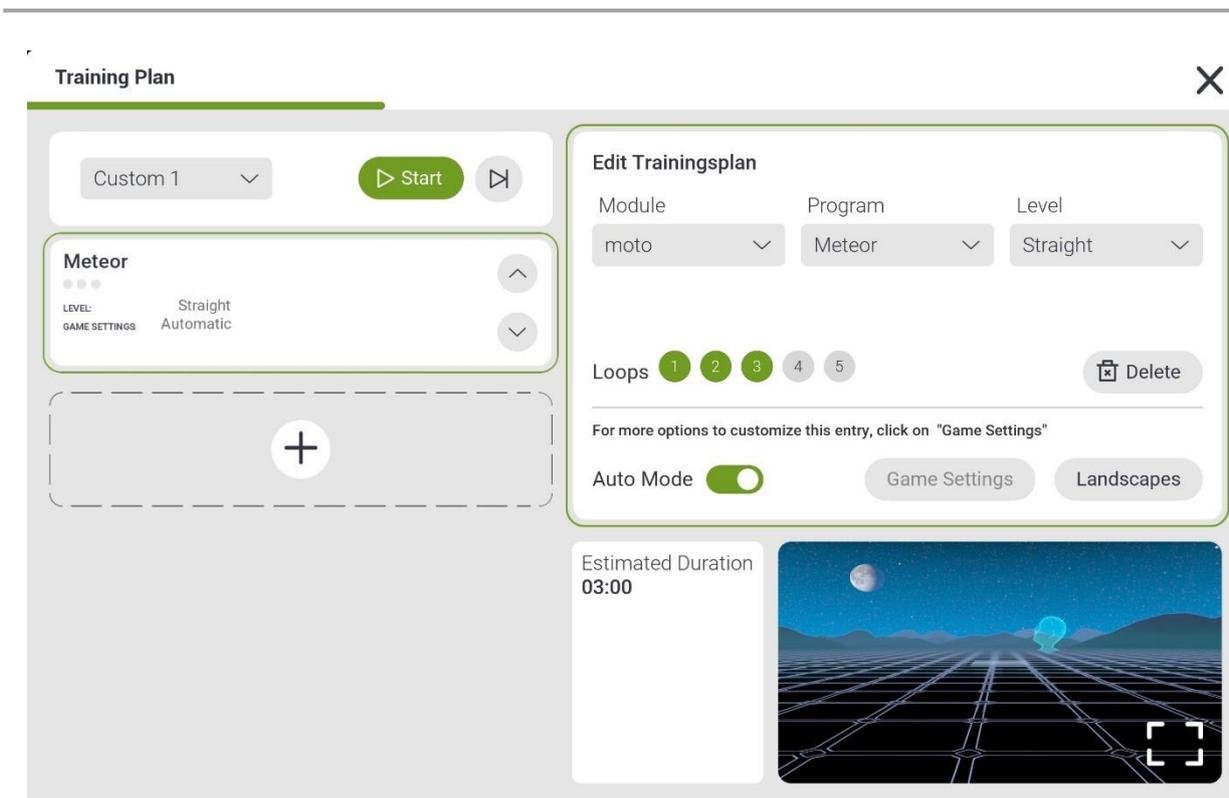
Create new training plan

To create a new training plan, you can edit one of the three preset training plans by using the [Edit] button. In the edit view, you can insert a new entry into the training plan via the plus icon on the left side. The up/down arrows in the entry let you move it to the desired position in the sequence. Tapping on an entry displays the settings for this entry on the top right. The following is shown in the settings menu:

- Familiar CUREO® menu: shows which module, programme and training should be played
- Circles filled with numbers: shows how many rounds or how many minutes (in games without rounds) should be played
- Auto Mode & Game Settings: depending on whether auto mode is turned on or off, the settings are determined automatically on the basis of previous performances or can be adjusted manually by the therapist.
- Landscapes: this is where you can set the landscape for this entry

Likewise, the entire entry can be deleted from the training plan in the settings menu. All changes in the settings menu are automatically saved and applied to the training plan.

The estimated duration states the total estimated duration of the training plan.



5.6.3 Patient testing and export (optional)

NOTE

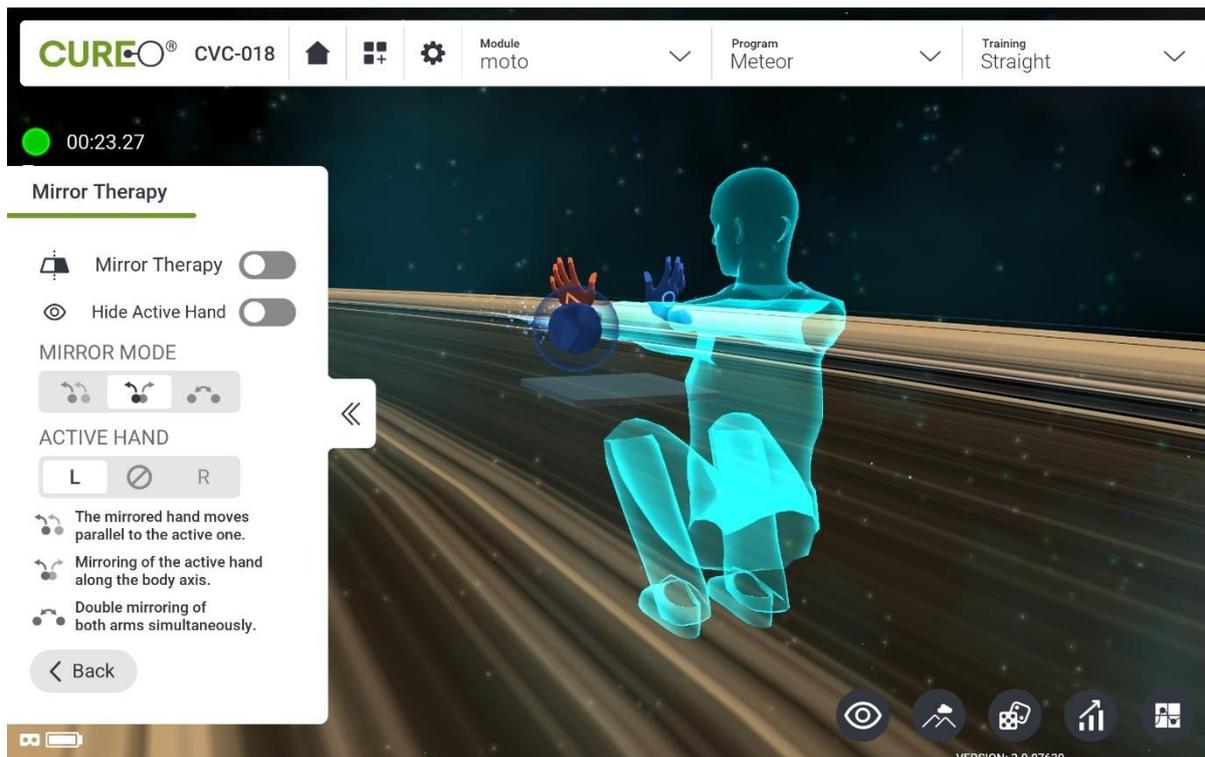
Movement parameters and test results greatly depend on the patient's position, which is why they serve exclusively to document the therapy history / therapy progression and no diagnostic or other purpose.

If you would like to carry out patient testing with your patient, you can find this option as a prepared training plan with the title [Patient testing] in the drop-down menu of the training plans. In this specific training plan, different test games are played in succession instead of the games. After every completed test game, you will see a pop-up that asks whether the test was performed correctly. As soon as you click on [Confirm], the patient test is continued with the next test game. Otherwise, the current test game is repeated. Once all the test games have been completed, you can continue with the normal therapy or view the captured data in the statistics tab (on the bottom right of the user interface). You can find more information on exporting the test results in the customer portal.

5.6.4 Mirror therapy

In nearly all modules, you have the option to switch on mirror therapy and adjust it specifically to your patient. After you have activated the [Mirror Therapy] switch, you can select the active hand of the patient, which is to be mirrored.

If it is not possible to switch the active hand to the other hand, this may be because you entered one-hand mode while setting up the patient. To change this, click on the home icon at the top of the main menu and then on [Patient Selection]. You can use [Edit] to edit the patient information and change it to two-handed use (select [LR] in one-hand mode).



If you select only one hand as the active hand (left or right), the patient will only move one (the active) arm. Now you can decide whether the active hand should be displayed or whether it is hidden, so that only the passive hand is visible to the patient. You can also decide whether the passive hand should move in parallel (i.e. move in the same direction as the active hand) or be mirrored (i.e. move in the opposite direction of the active hand) in relation to the active hand.

If you select both hands as the active hand (left and right), the inverted mirror mode is selected automatically. Here both hands are mirrored at the centre of the body, so that the patient uses the right hand to control the left hand of the avatar and the left hand for the right hand of the avatar.



5.6.5 Centre of playing area

As explained in the chapter *Calibration*, the centre of the playing area is specified during the calibration. However, it can always be moved later. This setting makes it possible to shift the position of the game in all three dimensions exactly to the training area of the patient. For example, if an object in the virtual environment is too far away, you can do this to bring it closer. It can also be moved further into an area that should receive additional training.

Correcting the centre of the playing area can also be helpful in situations that would otherwise require a new calibration (e.g. in case the real table is moved unintentionally).

To move the centre of the playing area, you can either use the plus and minus buttons to move the centre along the corresponding axis, or you can directly tap on the arrows and drag them. For a more detailed view, you can zoom in on the patient and table, just as if you were enlarging an image on a smartphone.

Once the change has been confirmed by selecting [Save], the playing area is reset and the currently active training is cancelled. Unlike the other settings, with this one you don't have to wait until the start of the next training round.

5.7 Using CUREO® in group therapy

⚠ CAUTION

Group therapies may only be performed by therapists who are trained and experienced in group therapy. In addition, the therapist must have experience of the patient's individual needs in order to carry out efficient therapy. Here, therapy should be set to easy at the start to ensure that the patients won't be overwhelmed.

⚠ CAUTION

Group therapy with one practicing therapist is limited to a maximum of six patients who already have experience with VR therapy.

⚠ CAUTION

It is important to ensure that the tablets are correctly allocated to the patients and outside of the patients' range of motion.

⚠ CAUTION

All of the safety and warning information in these instructions must be observed.

The training plan (see section *Training plan*) makes it possible to plan the intended therapy individually for each group participant in advance.

It is recommended to position the tablets in the order of the participants on a (if necessary separate) table, with enough distance to the participants to avoid collisions and mix-ups.

5.8 Unscheduled therapy termination

⚠ CAUTION

As a matter of principle, the therapy takes place in a planned setting, which is prescribed by the attending doctor and for which he or she is responsible. If exceptional or emergency situations should occur due to external circumstances, the therapist must immediately stop the therapy and/or terminate it.

In the following cases, the therapy must be interrupted immediately and possibly terminated:

- Occurrence of side effects such as malaise or motion sickness
- Patient doesn't move as expected
- The controllers don't respond
- The image in the therapist software freezes
- The therapist software returns to the connection screen
- The depiction on the therapist software deviates from the performed therapy
- The VR goggles fail
- The software fails
- The software behaves in an unstable way
- Unexpected events occur
- The therapy settings are set too difficult

There are two options for interrupting/terminating the therapy:

- **Immediate, total VR therapy termination:**
Immediate removal of the VR headset. As soon as you remove the VR headset from the patient, the therapy has been safely terminated for the patient.

- **Termination of the current therapy module:**

Press the [END] button in the display of the repeat modes in the training drop-down menu. As soon as you press the END button in the CUREO® software, the therapy and thus the instructions for movement and multisensory stimuli are cancelled. The patient is placed in a soothing VR environment.

5.9 Cleaning and disinfection

Use only disinfected hardware and perform the decontamination according to hygiene rules and the instructions of the applied disinfectant.

Make sure that the individual hardware components get only slightly damp but never wet during disinfection. In particular, the lenses inside and on the front of the headset may only be disinfected with a damp wipe, never with liquids.

The disinfectant wipes may not contain any abrasive components. You can find more detailed information on this in the section *Consumables*.

5.9.1 VR headset and controllers

After every use, the VR headset and controllers must be disinfected with damp disinfectant wipes on all relevant contact surfaces and decontaminated if needed.

The silicone protection is removable and resistant to fluids, which means it can also be wet cleaned, disinfected and decontaminated.

5.9.2 Tablet, router, connection cable and USB chargers

If needed, the tablet, router, charging cable / connection cable and USB chargers should be disinfected with the disinfectant wipes in the same way as the VR headset.

5.10 Troubleshooting and requests for repair

If you have additional questions or any feedback for us, please contact an employee of CUREosity or send an email to your service department.

You can also read the current FAQs in the customer area of our website:

<https://www.cureosity.de/>