

SimCPR[®] Trainer

User Manual

Read this carefully before use!



⚠ SimCPR[®] Trainer is not a medical device and is only to be used for CPR training!

Content

1. Intended use	3
2. Description	3
3. Functionality	4
4. Use	5
5. Periodic battery check and replacement	7
6. Background information (de)compression	8
7. Troubleshooting	8
8. SimCPR[®] Trainer app	9
9. Technical specifications	9
10. Explanation of symbols	10

1. Intended use

SimCPR® Trainer is a training tool for CPR-students to learn and train their CPR-skills with *SimCPR®*-feedback.

This device is only to be used for training chest compressions for adults (> 8 years) and for training with *SimCPR®*-feedback.

2. Description

SimCPR® Trainer shows students a correct tempo of chest compressions (110/min) and provides feedback on compression-decompression depth.

The first responder wears the *SimCPR® Trainer* preferably on the wrist of the hand that makes contact with the chest of the patient. This hand is trapped between the other hand and the patient's chest and has minimal freedom of movement. This ensures that the results of the depth measurements are more accurate.

⚠ Preferably the *SimCPR® Trainer* wristband is worn on the wrist of the hand that makes contact with the patient's chest.

As educated, the first responder always keeps contact with the patient's chest during CPR and does not lean on the chest after release (decompression).

If the *SimCPR® Trainer* is worn on the upper hand, this hand should keep in contact with the underlying hand.

In case the LED lights are not clearly visible during CPR, the *SimCPR® Trainer* can also be worn on the back of the upper hand. In this way the first responder is looking straight into the LED's.

Ensure that the wristband is tight enough around the wrist to ensure that there is no slackness, so that the wristband exactly follows the movement of the wrist.

Feedback on CPR quality is provided by a red and green LED light.

The frequency of the flashing of the LED lights indicates the correct chest compression rate (110/min).

The red flashing LED indicates that the compression-decompression depth is not deep enough, or that the chest is not rising sufficiently (< 5 cm/2 inches).

The green flashing LED indicates that the compression-decompression depth is adequate (≥ 5 cm/2 inches).

This simple feedback increases the number of effective chest compressions.¹

¹ [Lu, T.C., Chang, Y.T., Ho, T.W., Chen, Y., Lee, Y.T., Wang, Y.S. et al. Using a smartwatch with real-time feedback inTrainer to improve the delivery of high-quality cardiopulmonary resuscitation by healthcare Trainerprofessionals. *Resuscitation*. 2019; 140: 16–22](#)

3. Functionality

According to the current scientific resuscitation guidelines (ILCOR.org), chest compressions applied to patients over the age of 8 years must be at least 5 cm/2 inches deep.

The rate should be between 100-120 chest compressions per minute.

The *SimCPR® Trainer* registers the first responder's up and down wrist movements during the chest compressions (amplitude). The built-in accelerometer with SimCPR® algorithm analyses the movement and accurately calculates the distance travelled in millimetres (mm).

As long as the distance travelled is **less** than 5 cm/2 inches, the red LED will keep flashing. Once the distance travelled is **at least** 5 cm/2 inches, the green LED will start flashing.

The student can follow the flashing of the LED lights in order to deliver chest compressions at the correct rate (110/min).



The frequency of the flashing of the LED lights indicates the correct chest compression rate (110/min).

The red flashing LED indicates that the compression-decompression depth is not deep enough, or that the chest is not rising sufficiently (< 5 cm/2 inches).

The green flashing LED indicates that the compression-decompression depth is adequate (\geq 5 cm/2 inches).

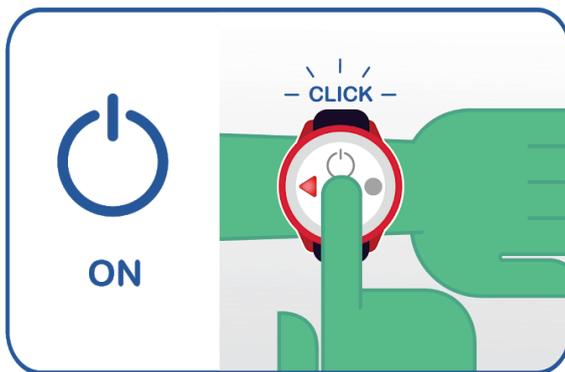
4. Use

SimCPR® Trainer can be used for CPR-training on adult victims or children older than 8 years.

SimCPR® Trainer can be used on every CPR-training manikin with a minimal compression depth of 6 cm (2,2 inch).

The first responder wears the *SimCPR® Pro* preferably on the wrist of the hand that makes contact with the chest of the patient. Make sure that the 2 LED-lights are clearly visible during chest compressions.

Ensure that the wristband is tight enough around the wrist to ensure that there is no slackness, so that the wristband exactly follows the movement of the wrist.



First turn on the *SimCPR® Trainer* by pressing the ON/OFF symbol on the sensor.

You should press the button in hard enough to hear it click.

The Trainer is active once the red LED light starts flashing.

The rate at which the LED light flashes (110 light signals per minute) indicates the correct chest compression rate.

The flashing continues at the same rate, and the first responder can follow this rate to be sure of giving the correct number of chest compressions per minute.

Note:

The flashing of the LED lights (red or green) at 110/min is an aid for maintaining the chest compression rhythm.

No feedback or correction is given on the actual chest compression rate delivered by the student.

The SimCPR® Trainer does give feedback on whether the depth of the chest compressions is insufficient (red LED) or sufficient (green LED).

⚠ Beware that your CPR manikin can be pushed deeper than 5 cm/2 inch. If not, you can not train according to the CPR-guidelines and the green LED will not start flashing.



Start compressing the chest keeping your arms straight, and follow the rhythm of the red flashing LED light (110/min). Do not lean after coming up (full recoil).



Press deeper until the green LED light starts flashing, and continue to follow this pace (110/min).

⚠ Allow the patient's chest to come all the way back up before compressing it again. Do not lean on the patient's chest!

Summary feedback

- ▲ (110/min): Depth chest compressions is not adequate (Press harder/Do not lean).
- (110/min): Depth chest compressions is OK ($\geq 5\text{cm}/2\text{ inch}$).

The rate at which the red or green LED light flashes (110 light signals per minute) indicates the correct chest compression rate.

5. Periodic battery check and replacement

The service life of the 3V lithium button cell battery is six years in standby mode or 100 active operating hours.

To save battery life, the *SimCPR® Trainer* automatically switches off after 2 minutes of not using it.

You can check battery capacity quickly anytime by switching the *SimCPR® Trainer* on and then off again.

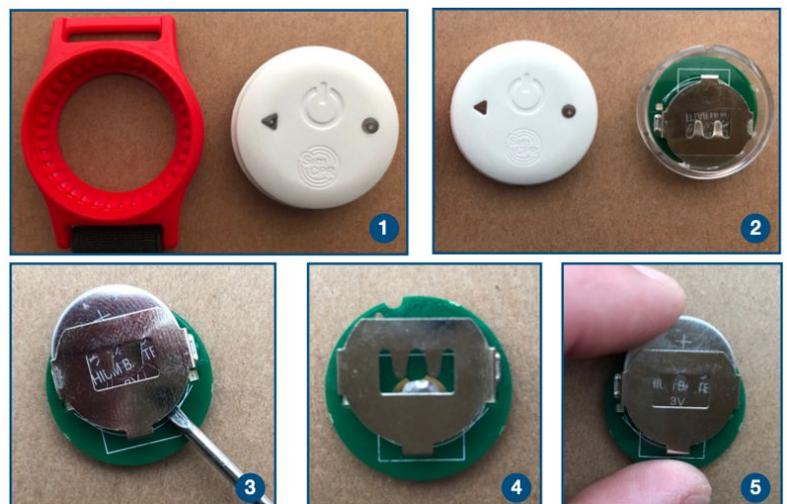
After you switch it off (by pressing the ON/OFF button for at least two seconds), the green or red LED will light up briefly. If the green LED lights up, there is sufficient battery charge available. If the red LED lights up, then you will need to replace the *SimCPR® Pro* with a new one.

You can also check the battery status using the *SimCPR® Coach-app* (see Appendix 2).

The *SimCPR® Trainer* is specifically suited for use in training centre courses, and comes with a replaceable battery (CR2032). Only use lithium UL-approved batteries from e.g. Varta, Panasonic, Sony, Philips or Duracell.

Replace the battery as follows (or watch the video on our Youtube-channel):

1. Press out the internal part for the back of the red ring.
2. Remove the soft white lit from the transparent box (sensor becomes visible) and remove the sensor out of the box.
3. Push the battery out to the metal holder.
4. Do not dispose of the battery with household waste but take it to a suitable waste station.
5. Insert a new battery in the same way (+ side up).
6. Place back the sensor into the transparent box (attention: this is only possible in one way).
7. Put the lit back on the box (attention: this is also possible in one way). Make sure that the light guides are still correctly positioned in the white soft lit (push if needed).
8. Finally put the internal part back into the red ring.



Turn the *SimCPR® Trainer* on and check if the LED flashes and both light guides are well placed so you can see both LED-lights clearly.
SimCPR® Trainer is now ready for use again.

6. Background information (de)compression

In addition to the correct depth and pace, allowing the chest to return completely to its usual position (by not continuing to lean on it) is an important condition for effective chest compression.

⚠ Continuing to lean on the chest after it comes up reduces the distance of the compression!

For example, if the first responder compresses the chest 6 cm/2.4 inches and continues to lean on it to a depth of 2 cm/0.8 inch, the *SimCPR® Trainer* will register a distance of only 4 cm/1.6 inches. This means the red LED will continue to flash.

The green LED will only flash if the first responder does not continue to lean on the chest, but allows it to return all the way to its original position.

7. Troubleshooting

Problem	Possible cause	Solution
<i>SimCPR® Trainer does not switch on (red LED does not flash).</i>	ON/OFF button has not been pressed hard enough.	Press the ON/OFF button firmly until you hear a 'click'.
	Battery is flat.	Replace the battery.
	Device is defective.	Contact your dealer.
<i>Green LED does not flash.</i>	Your compressions are not deep enough.	Press the manikin deeper (> 5 cm/2 inches). Check manual manikin to check if it can be pushed deeper than 5 cm/2inches.
	You are continuing to lean on the manikin's chest.	Allow the mankin's chest to come all the way up and do not continue to lean on it. Do maintain contact with the surface of the manikin after coming up.
	Device is defective.	Contact your dealer.

8. SimCPR® Trainer app

For installation and further use of SimCPR® app functions, consult the specific SimCPR® Trainer app *Quick-user Guide* or the [SimCPR Youtube channel](#).

Linking the *SimCPR® Trainer* to your smartphone using the SimCPR® Trainer app offers a number of additional benefits:

- Chest compression training and testing with score certificate
- Checking battery status.
- Firmware updates.

Chest compression training and testing

Next to training with the SimCPR® Trainer app, you can check how high your scores are after a minimum of one minute's chest compressions. You will receive a percentage score for the number of chest compressions deeper than 5 cm/2 inches and a percentage score for the number of chest compressions at a rate of 100-120 per minute.

9. Technical specifications

CPR-feedback

Rate (green and red LED light): 110 flashes a minute
Compression-decompression depth: Red: < 5 cm / 2 inches.*
Green: ≥ 5 cm/ 2 inches.*

* When the green LED flashes the software needs to measure three times the value < 5 cm/ 2 inches, before the red LED starts flashing again. *Depth accuracy: ± 10%*

Dimensions (HxBxD): 50 mm x 39 mm x 20 mm (2,0" x 1.5" x 0.8")

Weight: 18 g

Batteries: CR2032 (3V Lithium)

Battery Lifetime: 6 years/100 hours active use

Ambient conditions:

- Temperature: Between -20°C and +60°C
- Relative humidity: 0 to 90% RH
- Atmospheric pressure: 860 hPa to 1,060 hPa

Protection against dust/water: IP54

Storage: *SimCPR® Trainer* should be stored in its original packaging at a temperature of 25°C ± 5°C / RH 30-45%

Electromagnetic compatibility

Health	EN 62311 (2008)
Safety	IEC 60950-1:2005 + CORR:2006 + A1:2009 + A2:2013
	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + AC:2011 + A2:2013
ROHS	EN 50581:2012
EMC	EN 55032 (2015) / AC (2016-07) Class B
	EN 61000-4-2 (2009)
	EN 301 489-1 V2.2.0 (2017-03)
	EN 301 489-17 V3.2.0 (2017-03)
RADIO	ETSI EN 300 328 V2.1.1 (2016-11)

10. Explanation of symbols

	CE mark
	WEEE symbol (waste processing)
	Manufacturer details
	Manual
	Reference number
	Atmospheric Pressure Limits
	Humidity Limits
	Temperature Limits
	FCC label
	Warning/attention symbol
	ON/OFF button