SimCPR® Pro

Trainer

User Manual

Read this carefully before use!

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

Content

1. Intended use

SimCPR® Pro Trainer is a training tool for CPR-rescuers to optimize their CPR-skills.

Indication of use:
This device is only to be used for training chest compressions for adults (> 12 years) and for SimCPR®-feedback simulation.

2. Description

SimCPR® Pro Trainer shows users if chest compressions are compliant with the international CPR-guidelines on depth and rate.
When the green LED is continuously on, compression-decompression is at least 2 inches (5cm) and rate between 100-120 bpm.

The rescuer wears the *SimCPR® Pro Trainer* on the wrist of the left or right hand.
As educated, the rescuer always keeps contact with the chest of the manikin during compressions and does not lean on the chest after release (decompression).
If the *SimCPR® Pro Trainer* is worn on the upper hand, this hand should keep in contact with the underlying hand. This ensures that the results of the depth measurements are accurate.

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.
In case the LED lights are not clearly visible during CPR, the *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.

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 compression-decompression movement is not enough (< 5 cm/2 inches). This means chest compressions are not deep enough and/or there is no full recoil of the chest.

The green flashing LED indicates that compression-decompression depth is adequate (≥ 5 cm/2 inches). When the green LED is continuously on, both debt (≥ 5cm/2 inches) and tempo (100-120bpm) are correct.
This form of simple feedback optimizes the quality of 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 imPro Trainerves the delivery of high-quality cardiopulmonary resuscitation by healthcare Pro Trainerfessionals. *Resuscitation*. 2019; 140: 16–22

3. Functionality

According to the current scientific resuscitation guidelines (ILCOR.org), chest compressions applied to (young) adult patients must be at least 5 cm/2 inches deep.
The rate should be between 100-120 chest compressions per minute.

As a wristband, the *SimCPR® Pro Trainer* registers the rescuer's up and down movements during the chest compressions (amplitude). The built-in smart SimCPR®-accelerometer analyses the movement and accurately calculates the distance.

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 or is continuously on if the tempo is between 100-120bpm .

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

4. Use

SimCPR® Pro Trainer is suitable for CPR-training on adult victims or children older than 12 years. The training device can be used on every CPR-training manikin that is able to be compressed at least 5cm/2inches.

The rescuer wears the trainer on his/her preferred wrist, making sure that the 2 LED-lights are clearly visible during chest compressions.
The wristband should be 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® Pro Trainer* by pressing the ON/OFF symbol on the sensor.
You should press the button in hard enough to hear it click.

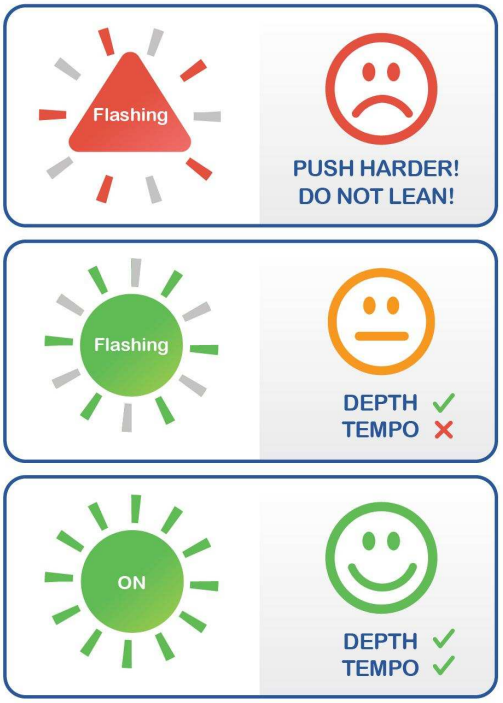
The trainer is active once the red LED light starts flashing. The rate at which the LED light flashes (110 light signals per minute) indicates a correct chest compression rate.

Note:
First focus on getting a correct depth and then on getting a correct tempo.

⚠ **Make sure that the manikin is not placed on a soft surface.**

⚠ **Beware 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.**

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



Start chest compressions on the manikin keeping your arms straight and do not lean after coming up (full chest recoil).

Push harder until the green LED-light starts flashing.
When the green LED is *flashing*, depth is OK but tempo is not.

When the green LED is *continuously on*, both depth (≥ 5cm/2 inches) and tempo (100-120/min) are OK.

5. Periodic battery check and replacement

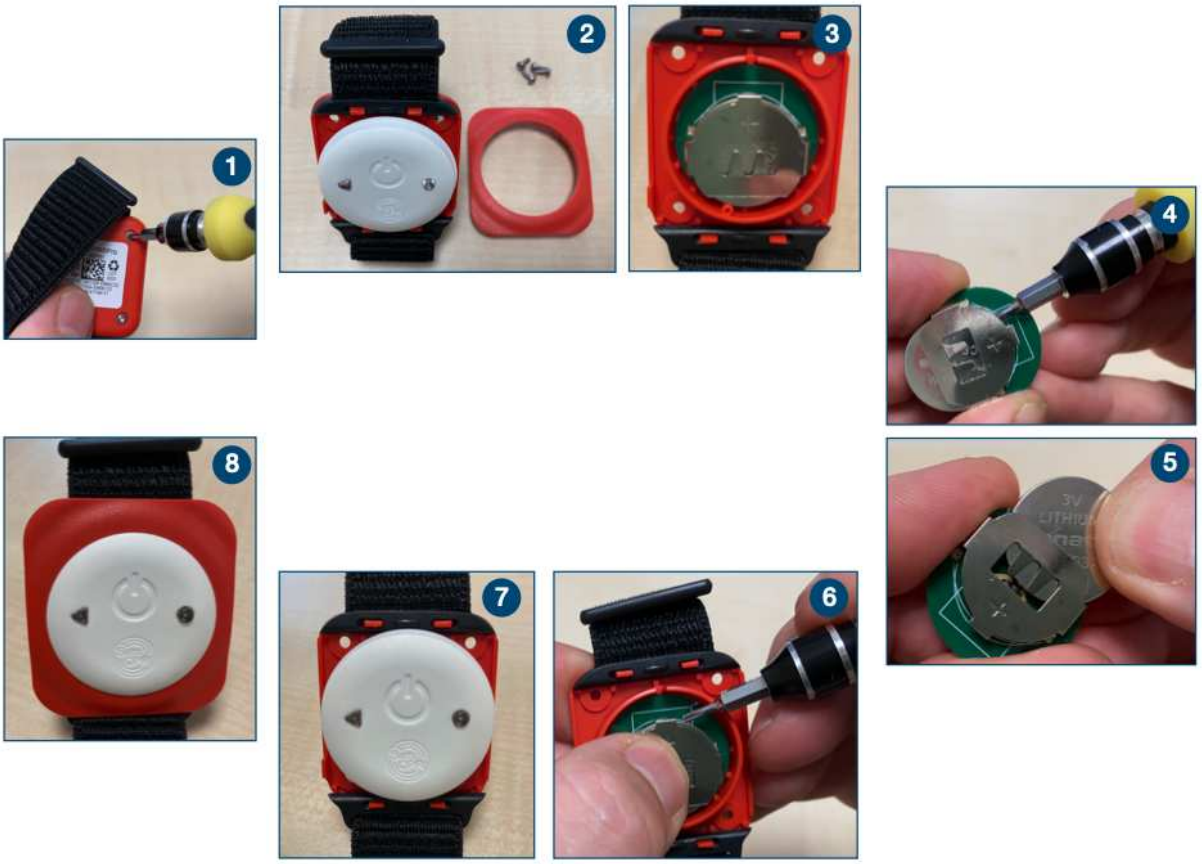
The service life of the 3V lithium button cell battery is six years in standby mode or 100 active operating hours.
To save battery life, the *SimCPR® Pro Trainer* automatically switches off after 2 minutes of not using it.

You can check battery capacity quickly anytime by switching the *SimCPR® Pro Trainer* on and then off again. After you switch it off (by pressing the ON/OFF button for at least 3 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, you need to replace the battery of the trainer with a new one.

You can also check the battery status using the *SimCPR® Trainer app* (see section 8).

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

Replace the battery as follows:



1. Remove the 4 screws at the back of the trainer device (Torx 6).
2. Remove the upper red part of the housing.
3. Remove the white cover (with light guides).
4. Take out the sensor and push the battery out to the metal holder (do not dispose of the battery with household waste but take it to a suitable waste station).
5. Insert a new 3V battery (CR2032) in the same way (+ side up).
6. Place back the sensor (this is only possible in one way) and push the battery down for optimal LED-light effect.
7. Place back the white cover with light guides (also this is only possible in one way).
8. Place back the upper red part (fits one way) and finally put the 4 screws back.

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

6. Background information (de)compression

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 rescuer compresses the chest of the manikin 6 cm/2.4 inches and continues to lean on it to a depth of 2 cm/0.8 inch, the *SimCPR® Pro Trainer* will register a distance of only 4 cm/1.6 inches. This means the red LED will continue to flash.
In this situation the green LED will only go on if the rescuer stops leaning on the chest and allows it to return all the way to its original position.

7. Troubleshooting

Problem	Possible cause	Solution
SimCPR® Pro Trainer does not switch on (red LED does not flash).	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.
Green LED does not flash.	Your compressions are not deep enough.	Press the manikin deeper (≥ 5 cm/2 inches). Check the manual of the manikin to see 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.
	Device is defective.	Contact your dealer.
Green LED will not go on continuously.	Tempo of compressions is too slow or too fast.	Push faster or slower to get a correct tempo of 100-120/min.

8. Trainer app

The SimCPR® Trainer app is available in iOS and Android.
For use of SimCPR® Trainer app functions, consult the specific SimCPR® Trainer app *Quick-user Guide* or the SimCPR Youtube channel.

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

- Voice prompts for CPR-feedback.
- Chest compression training and testing with score certificate.
- Checking battery status.
- Firmware updates.

9. Technical specification

SimCPR®Feedback

Red LED flashes: Compression-decompression depth < 5cm/2 inches.
Green LED flashes: Compression-decompression depth ≥ 5cm/2 inches.*
Solid green LED: Compression-decompression depth ≥ 5cm/2 inches **and** tempo 100-120/min.

* 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 accelerometer: ± 5%*

Model: SimCPR®Pro Trainer
Catalog number: 98091
Dimensions: 45x40x20 mm (1.77”x1.57”x0.97”)
Weight: 23 g
Batteries: CR2032 (3V Lithium)
Battery lifetime: 6 years/100 hours operational use
User conditions:

- Temperature: Between 0°C and +40°C
- Relative humidity: 0 to 90% RH
- Atmospheric pressure: 860 hPa to 1060 hPa

Protection against dust/water: IP54
Storage: *SimCPR® Pro Trainer* should be stored in its original packaging at a temperature of 25℃ ± 5℃ / 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

	ON/OFF button
	CE mark
	Manufacturer details
	Manual
	Reference number
	LOT number
	WEEE symbol (waste processing)
	FCC label
	QR-code for unique identification