

**A03191**

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**Owner's Manual**

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## Introduction

### ⚠ WARNING

See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

Always consult your physician before you begin or modify any exercise program.

## Keys

Image not final



①	⏻ LIGHT	Hold to turn the device on and off. Select to turn the backlight on and off.
②	start and stop	Select to start and stop the timer. Select to choose an option or to acknowledge a message.
③	lap and back	Select to mark a new lap. Select to return to the previous screen.
④	up and down	Select to scroll through the widgets, data screens, options, and settings.

## Training

### Swim Terminology

**Length:** One trip down the pool.

**Interval:** One or more consecutive lengths. A new interval starts after a rest.

**Stroke:** A stroke is counted every time your arm wearing the device completes a full cycle.

**Swolf:** Your swolf score is the sum of the time for one pool length and the number of strokes for that length. For example, 30 seconds plus 15 strokes equals a swolf score of 45. Swolf is a measurement of swimming efficiency and, like golf, a lower score is better.

### Indoor Activities

The Forerunner device can be used for training indoors, such as running on an indoor track or using a stationary bike. GPS is turned off for indoor activities.

When running or walking with GPS turned off, speed, distance, and cadence are calculated using the accelerometer in the device. The accelerometer is self-calibrating. The accuracy of the speed, distance, and cadence data improves after a few outdoor runs or walks using GPS.

**TIP:** Holding the handrails of the treadmill reduces accuracy. You can use an optional foot pod to record pace, distance, and cadence.

When cycling with GPS turned off, speed and distance are not available unless you have an optional sensor that sends speed and distance data to the device (such as a speed or cadence sensor).

## Workouts

You can create custom workouts that include goals for each workout step and for varied distances, times, and calories. You can create workouts using Garmin Connect™ or select a training plan that has built-in workouts from Garmin Connect, and transfer them to your device.

You can schedule workouts using Garmin Connect. You can plan workouts in advance and store them on your device.


### About the Training Calendar

The training calendar on your device is an extension of the training calendar or schedule you set up in Garmin Connect. After you have added a few workouts to the Garmin Connect calendar, you can send them to your device. All scheduled workouts sent to the device appear in the training calendar list by date. When you select a day in the training calendar, you can view or do the workout. The scheduled workout stays on your device whether you complete it or skip it. When you send scheduled workouts from Garmin Connect, they overwrite the existing training calendar.

### Using Garmin Connect Training Plans

Before you can download and use a training plan, you must have a Garmin Connect account ([Garmin Connect, page 4](#)).

You can browse your Garmin Connect account to find a training plan, schedule workouts, and send them to your device.

- 1 Connect the device to your computer.
- 2 From your Garmin Connect account, select and schedule a training plan.
- 3 Review the training plan in your calendar.
- 4 Select , and follow the on-screen instructions.

### Interval Workouts

You can create interval workouts based on distance or time. The device saves your custom interval workout until you create another interval workout. You can use open intervals for track workouts and when you are running a known distance.

## Heart Rate Features

The Forerunner device has a wrist-based heart rate monitor and is also compatible with ANT+® chest heart rate monitors. You can view wrist-based heart rate data on the heart rate widget. When both wrist-based heart rate and ANT+ heart rate data are available, your device uses the ANT+ heart rate data. You must have a heart rate monitor to use the features described in this section.

### Running Dynamics

You can use your compatible Forerunner device paired with the HRM-Run™ accessory to provide real-time feedback about your running form. If your Forerunner device was packaged with the HRM-Run accessory, the devices are already paired.

The HRM-Run accessory has an accelerometer in the module that measures torso movement in order to calculate six running metrics.

**Cadence:** Cadence is the number of steps per minute. It displays the total steps (right and left combined).

**Vertical oscillation:** Vertical oscillation is your bounce while running. It displays the vertical motion of your torso, measured in centimeters for each step.

**Ground contact time:** Ground contact time is the amount of time in each step that you spend on the ground while running. It is measured in milliseconds.

**NOTE:** Ground contact time is not available while walking.

**Ground contact time balance:** Ground contact time balance displays the left/right balance of your ground contact time

while running. It displays a percentage. For example, 53.2 with an arrow pointing left or right.

**Stride length:** Stride length is the length of your stride from one footfall to the next. It is measured in meters.

**Vertical ratio:** Vertical ratio is the ratio of vertical oscillation to stride length. It displays a percentage. A lower number typically indicates better running form.

## Color Gauges and Running Dynamics Data

The running dynamics screens display a color gauge for the primary metric. You can display cadence, vertical oscillation, ground contact time, ground contact time balance, or vertical ratio as the primary metric. The color gauge shows you how your running dynamics data compare to those of other runners. The color zones are based on percentiles.

Garmin® has researched many runners of all different levels. The data values in the red or orange zones are typical for less experienced or slower runners. The data values in the green, blue, or purple zones are typical for more experienced or faster runners. More experienced runners tend to exhibit shorter ground contact times, lower vertical oscillation, lower vertical ratio, and higher cadence than less experienced runners. However, taller runners typically have slightly slower cadences, longer strides, and slightly higher vertical oscillation. Vertical ratio is your vertical oscillation divided by stride length. It is not correlated with height.

**NOTE:** The color gauge for ground contact time balance is different ([Ground Contact Time Balance Data, page 2](#)).

Go to [www.garmin.com](http://www.garmin.com) for more information on running dynamics. For additional theories and interpretations of running dynamics data, you can search reputable running publications and websites.

Color Zone	Percentile in Zone	Cadence Range	Vertical Oscillation Range	Vertical Ratio	Ground Contact Time Range
Purple	>95	>183 spm	<6.4 cm	<6.1%	<218 ms
Blue	70–95	174–183 spm	6.4–8.1 cm	6.1–7.4%	218–248 ms
Green	30–69	164–173 spm	8.2–9.7 cm	7.5–8.6%	249–277 ms
Orange	5–29	153–163 spm	9.8–11.5 cm	8.7–10.1%	278–308 ms
Red	<5	<153 spm	>11.5 cm	>10.1%	>308 ms

## Ground Contact Time Balance Data

Ground contact time balance measures your running symmetry and appears as a percentage of your total ground contact time. For example, 51.3% with an arrow pointing left indicates the runner is spending more time on the ground when on the left foot. If your data screen displays both numbers, for example 48–52, 48% is the left foot and 52% is the right foot.

Color Zone	Red	Orange	Green	Orange	Red
<b>Symmetry</b>	Poor	Fair	Good	Fair	Poor
<b>Percent of Other Runners</b>	5%	25%	40%	25%	5%
<b>Ground Contact Time Balance</b>	>52.2% L	50.8–52.2% L	50.7% L–50.7% R	50.8–52.2% R	>52.2% R

While developing and testing running dynamics, the Garmin team found correlations between injuries and greater imbalances with certain runners. For many runners, ground contact time balance tends to deviate further from 50–50 when running up or down hills. Most running coaches agree that a symmetrical running form is good. Elite runners tend to have quick and balanced strides.

You can watch the color gauge or data field during your run or view the summary on your Garmin Connect account after your run. As with the other running dynamics data, ground contact time balance is a quantitative measurement to help you learn about your running form.

## Physiological Measurements

These physiological measurements require wrist-based heart rate or a compatible heart rate monitor. The measurements are estimates that can help you track and understand your training activities and race performances. These estimates are provided and supported by Firstbeat.

**NOTE:** The estimates may seem inaccurate at first. The device requires you to complete a few activities to learn about your performance.

**VO2 max.:** Cycling VO2 max. requires a chest heart rate monitor. VO2 max. is the maximum volume of oxygen (in milliliters) you can consume per minute per kilogram of body weight at your maximum performance.

**Predicted race times:** Your device uses the VO2 max. estimate and published data sources to provide a target race time based on your current state of fitness. This projection also presumes you have completed the proper training for the race.

**Recovery advisor:** The recovery advisor displays how much time remains before you are fully recovered and ready for the next hard workout.

**Stress score:** Stress score requires a chest heart rate monitor. Stress score measures your heart rate variability while standing still for 3 minutes. It provides your overall stress level. The scale is 1 to 100, and a lower score indicates a lower stress level.

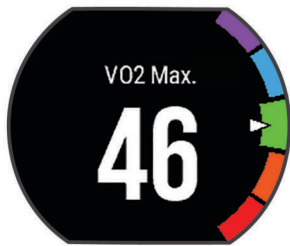
**Performance condition:** Your performance condition is a real-time assessment after 6 to 20 minutes of activity. It can be added as a data field so you can view your performance condition during the rest of your activity. It compares your real-time condition to your average fitness level.

**Lactate threshold:** Lactate threshold requires a chest heart rate monitor. Lactate threshold is the point where your muscles start to rapidly fatigue. Your device measures your lactate threshold level using heart rate data and pace.

## About VO2 Max. Estimates

VO2 max. is the maximum volume of oxygen (in milliliters) you can consume per minute per kilogram of body weight at your maximum performance. In simple terms, VO2 max. is an indication of athletic performance and should increase as your level of fitness improves. You can use your Garmin device paired with a compatible heart rate monitor to display your running VO2 max. estimate.

Your VO2 max. estimate appears as a number and position on the color gauge.



Purple	Superior
Blue	Excellent
Green	Good
Orange	Fair
Red	Poor

VO2 max. data and analysis is provided with permission from The Cooper Institute®. For more information, see the appendix ([VO2 Max. Standard Ratings, page 9](#)), and go to [www.CooperInstitute.org](http://www.CooperInstitute.org).

### Recovery Advisor

You can use your Garmin device with a heart rate monitor to display how much time remains before you are fully recovered and ready for the next hard workout.

**Recovery time:** The recovery time appears immediately following an activity. The time counts down until it is optimal for you to attempt another hard workout.

### Recovery Heart Rate

If you are training with a heart rate monitor, you can check your recovery heart rate value after each activity. Recovery heart rate is the difference between your exercising heart rate and your heart rate two minutes after the exercise has stopped. For example, after a typical training run, you stop the timer. Your heart rate is 140 bpm. After two minutes of no activity or cool down, your heart rate is 90 bpm. Your recovery heart rate is 50 bpm (140 minus 90). Some studies have linked recovery heart rate to cardiac health. Higher numbers generally indicate healthier hearts.

**TIP:** For best results, you should stop moving for two minutes while the device calculates your recovery heart rate value. You can save or discard the activity after this value appears.

### Performance Condition

As you complete your activity, such as running or cycling, the performance condition feature analyzes your pace, heart rate, and heart rate variability to make a real-time assessment of your ability to perform compared to your average fitness level. Performance condition values range from -20 to +20. After the first 6 to 20 minutes of your activity, the device displays your performance condition score. For example, a score of +5 means that you are rested, fresh, and capable of a good run or ride. You can add performance condition as a data field to one of your training screens to monitor your ability throughout the activity. Performance condition can also be an indicator of fatigue level, especially at the end of a long training run or ride.

**NOTE:** The device requires a few runs or rides with a heart rate monitor to get an accurate VO2 max. estimate and learn about your running or riding ability (getting your vo2 max cycling).

### Lactate Threshold

Lactate threshold is the exercise intensity at which lactate (lactic acid) starts to accumulate in the bloodstream. In running, it is the estimated level of effort or pace. When a runner exceeds the threshold, fatigue starts to increase at an accelerating rate. For experienced runners, the threshold occurs at approximately 90% of their maximum heart rate and between 10k and half-marathon race pace. For average runners, the lactate threshold often occurs well below 90% of maximum heart rate. Knowing your

lactate threshold can help you determine how hard to train or when to push yourself during a race.

If you already know your lactate threshold heart rate value, you can enter it in your user profile settings (setting heart rate zones).

## Activity Tracking

### Sleep Tracking

While you are sleeping, the device monitors your movement. Sleep statistics include total hours of sleep, sleep levels, and sleep movement. You can set your normal sleep hours in the user settings on your Garmin Connect account. You can view your sleep statistics on your Garmin Connect account.

### Intensity Minutes

To improve your health, organizations such as the U.S. Centers for Disease Control and Prevention, the American Heart Association®, and the World Health Organization, recommend at least 150 minutes per week of moderate intensity activity, such as brisk walking, or 75 minutes per week of vigorous intensity activity, such as running.

The device monitors your activity intensity and tracks your time spent participating in moderate to vigorous intensity activities (heart rate data is required to quantify vigorous intensity). You can work toward achieving your weekly intensity minutes goal by participating in at least 10 consecutive minutes of moderate to vigorous intensity activities. The device adds the amount of moderate activity minutes with the amount of vigorous activity minutes. Your total vigorous intensity minutes are doubled when added.

### Earning Intensity Minutes

Your Forerunner device calculates intensity minutes by comparing your heart rate data during an activity to your average resting heart rate. If heart rate is turned off, the device calculates moderate intensity minutes by analyzing your steps per minute.

- Start a timed activity for the most accurate calculation of intensity minutes.
- Exercise for at least 10 consecutive minutes at a moderate or vigorous intensity level.

## Smart Features

### Widgets

Your device comes preloaded with widgets that provide at-a-glance information. Some widgets require a Bluetooth® connection to a compatible smartphone.

Some widgets are not visible by default. You can add them to the widget loop manually.

**Calendar:** Displays upcoming meetings from your smartphone calendar.

**Music controls:** Provides music player controls for your smartphone.

**Weather:** Displays the current temperature and weather forecast.

**Activity tracking:** Tracks your daily step count, step goal, distance traveled, calories, and sleep statistics.

**Intensity minutes:** Tracks your time spent participating in moderate to vigorous activities, your weekly intensity minutes goal, and progress toward your goal.

**Heart rate:** Displays your current heart rate in beats per minute (bpm), resting heart rate for today, and a graph of your heart rate.

**Last sport:** Displays a brief summary of your last recorded sport and your total distance for the week.

**Controls:** Allows you to turn on and off the Bluetooth connectivity and features including do not disturb, find my phone, and manual syncing.

### VIRB® Remote

The VIRB remote function allows you to control your VIRB action camera using your device. Go to [www.garmin.com/VIRB](http://www.garmin.com/VIRB) to purchase a VIRB action camera.

## Bluetooth Connected Features

The Forerunner device has several Bluetooth connected features for your compatible smartphone using the Garmin Connect Mobile app. For more information, go to [www.garmin.com/intosports/apps](http://www.garmin.com/intosports/apps).

**LiveTrack:** Allows friends and family to follow your races and training activities in real time. You can invite followers using email or social media, allowing them to view your live data on a Garmin Connect tracking page.

**Activity uploads:** Automatically sends your activity to the Garmin Connect Mobile app as soon as you finish recording the activity.

**Software updates:** Your device wirelessly downloads the latest software update. The next time you turn on the device, you can follow the on-screen instructions to update the software.

**Workout downloads:** Allows you to browse for workouts in the Garmin Connect Mobile app and wirelessly send them to your device.

**Social media interactions:** Allows you to post an update to your favorite social media website when you upload an activity to the Garmin Connect Mobile app.

**Notifications:** Displays phone notifications and messages on your Forerunner device.

**Audio Prompts:** Allows the Garmin Connect Mobile app to play status announcements on your smartphone during a run or other activity.

## Connect IQ™ Features

You can add Connect IQ features to your watch from Garmin and other providers using the Garmin Connect Mobile app. You can customize your device with watch faces, data fields, widgets, and apps.

**Watch Faces:** Allow you to customize the appearance of the clock.

**Data Fields:** Allow you to download new data fields that present sensor, activity, and history data in new ways. You can add Connect IQ data fields to built-in features and pages.

**Widgets:** Provide information at a glance, including sensor data and notifications.

**Apps:** Add interactive features to your watch, such as new outdoor and fitness activity types.

### Downloading Connect IQ Features

Before you can download Connect IQ features from the Garmin Connect Mobile app, you must pair your Forerunner device with your smartphone.

- 1 From the settings in the Garmin Connect Mobile app, select **Connect IQ Store**.
- 2 If necessary, select your device.
- 3 Select a Connect IQ feature.
- 4 Follow the on-screen instructions.

### Downloading Connect IQ Features Using Your Computer

- 1 Connect the device to your computer using a USB cable.
- 2 Go to [www.garminconnect.com](http://www.garminconnect.com) and sign in.

- 3 From your devices widget, select **Connect IQ Store**.

- 4 Select a Connect IQ feature, and download it.

- 5 Follow the on-screen instructions.

## History

History includes time, distance, calories, average pace or speed, lap data, and optional ANT+ sensor information.

**NOTE:** When the device memory is full, your oldest data is overwritten.

## Data Management

**NOTE:** The device is not compatible with Windows® 95, 98, Me, Windows NT®, and Mac® OS 10.3 and earlier.

### Deleting Files

#### NOTICE

If you do not know the purpose of a file, do not delete it. Your device memory contains important system files that should not be deleted.

- 1 Open the **Garmin** drive or volume.
- 2 If necessary, open a folder or volume.
- 3 Select a file.
- 4 Press the **Delete** key on your keyboard.

**NOTE:** If you are using an Apple® computer, you must empty the Trash folder to completely remove the files.

### Disconnecting the USB Cable

If your device is connected to your computer as a removable drive or volume, you must safely disconnect your device from your computer to avoid data loss. If your device is connected to your Windows computer as a portable device, it is not necessary to safely disconnect.

- 1 Complete an action:
  - For Windows computers, select the **Safely Remove Hardware** icon in the system tray, and select your device.
  - For Apple computers, select the device, and select **File > Eject**.
- 2 Disconnect the cable from your computer.

## Sending Data to Your Computer

You can upload your activity data manually to your Garmin Connect account using the USB cable.

- 1 Connect the device to your computer using the USB cable.
- 2 Go to [www.garminconnect.com/start](http://www.garminconnect.com/start).
- 3 Follow the on-screen instructions.

## Garmin Connect

You can connect with your friends on Garmin Connect. Garmin Connect gives you the tools to track, analyze, share, and encourage each other. Record the events of your active lifestyle including runs, walks, rides, swims, hikes, triathlons, and more. To sign up for a free account, go to [www.garminconnect.com/start](http://www.garminconnect.com/start).

**Store your activities:** After you complete and save an activity with your device, you can upload that activity to your Garmin Connect account and keep it as long as you want.

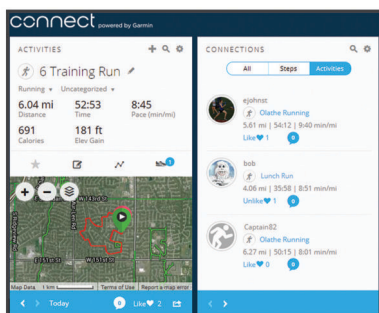
**Analyze your data:** You can view more detailed information about your activity, including time, distance, elevation, heart rate, calories burned, cadence, running dynamics, an overhead map view, pace and speed charts, and customizable reports.

**NOTE:** Some data requires an optional accessory such as a heart rate monitor.



You can view more detailed information about your activity, including time, distance, elevation, heart rate, calories burned, an overhead map view, pace and speed charts, and customizable reports.

**NOTE:** Some data requires an optional accessory such as a heart rate monitor.



**Plan your training:** You can choose a fitness goal and load one of the day-by-day training plans.

**Track your progress:** You can track your daily steps, join a friendly competition with your connections, and meet your goals.

**Share your activities:** You can connect with friends to follow each other's activities or post links to your activities on your favorite social networking sites.

**Manage your settings:** You can customize your device and user settings on your Garmin Connect account.

**Access the Connect IQ store:** You can download apps, watch faces, data fields, and widgets.

## Navigation

You can use the GPS navigation features on your device to view your path on a map, save locations, and find your way home.

## Courses

You can send a course from your Garmin Connect account to your device. After it is saved to your device, you can navigate the course on your device.

You can follow a saved course simply because it is a good route. For example, you can save and follow a bike friendly commute to work.

You can also follow a saved course, trying to match or exceed previously set performance goals. For example, if the original course was completed in 30 minutes, you can race against a Virtual Partner® trying to complete the course in under 30 minutes.

## ANT+ Sensors

Your device can be used with wireless ANT+ sensors. For more information about compatibility and purchasing optional sensors, go to <http://buy.garmin.com>.

## HRM-Swim™ Accessory

### Sizing the Heart Rate Monitor

Before your first swim, take some time sizing the heart rate monitor. It should be tight enough to stay in place when pushing off the pool wall.

- Select a strap extender, and attach it to the elastic end of the heart rate monitor.

The heart rate monitor comes with three extender straps to fit different chest sizes.

**TIP:** The medium strap extender works for most shirt sizes (from medium to extra-large).

- Put on the heart rate monitor backward to easily adjust the slider on the strap extender.
- Put on the heart rate monitor forward to easily adjust the slider on the heart rate monitor.

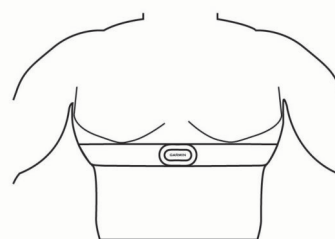
## Putting On the Heart Rate Monitor

You should wear the heart rate monitor directly on your skin, just below your sternum.

- Select a strap extender for the best fit.
- Wear the heart rate monitor with the Garmin logo facing right-side up.  
The hook ① and loop ② connection should be on your right side.



- Wrap the heart rate monitor around your chest, and connect the strap hook to the loop.



**NOTE:** Make sure the care tag does not fold over.

- Tighten the heart rate monitor so it is snug around your chest, but not restrictive.

After you put on the heart rate monitor, it is active, storing, and sending data.

## Tips for Using the HRM-Swim Accessory

- Adjust the tightness of the heart rate monitor and strap extender if the heart rate monitor slides down your chest when pushing off the pool wall.
- Stand up between intervals so that the heart rate monitor is out of the water to see your heart rate data.

## Caring for the Heart Rate Monitor

### NOTICE

A buildup of sweat and salt on the strap can decrease the ability of the heart rate monitor to report accurate data.

- Rinse the heart rate monitor after every use.
- Hand wash the heart rate monitor after every seven uses, using a tiny amount of mild detergent, such as dishwashing liquid.  
**NOTE:** Using too much detergent may damage the heart rate monitor.
- Do not put the heart rate monitor in a washing machine or dryer.
- When drying the heart rate monitor, hang it up or lay it flat.

## HRM-Tri™ Accessory

The HRM-Swim section of this manual explains recording heart rate during your swim (swimming in open water).

## Pool Swimming

### NOTICE

Hand wash the heart rate monitor after exposure to chlorine or other pool chemicals. Prolonged exposure to these substances can damage the heart rate monitor.

The HRM-Tri accessory is designed primarily for open water swimming, but it can be used occasionally for pool swimming. The heart rate monitor should be worn under a swim suit or triathlon top during pool swimming. Otherwise, it may slide down your chest when pushing off the pool wall.

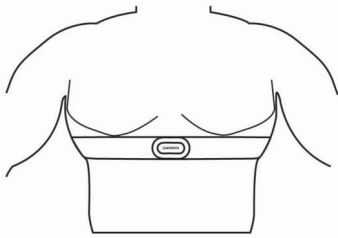
### Putting On the Heart Rate Monitor

You should wear the heart rate monitor directly on your skin, just below your sternum. It should be snug enough to stay in place during your activity.

- 1 If necessary, attach the strap extender to the heart rate monitor.
- 2 Wet the electrodes ① on the back of the heart rate monitor to create a strong connection between your chest and the transmitter.



- 3 Wear the heart rate monitor with the Garmin logo facing right-side up.



The loop ② and hook ③ connection should be on your right side.

- 4 Wrap the heart rate monitor around your chest, and connect the strap hook to the loop.

**NOTE:** Make sure the care tag does not fold over.

After you put on the heart rate monitor, it is active and sending data.

### Data Storage

The heart rate monitor can store up to 20 hours of data in a single activity. When the heart rate monitor memory is full, your oldest data is overwritten.

You can start a timed activity on your paired Forerunner device, and the heart rate monitor records your heart rate data even if you move away from your device. For example, you can record heart rate data during fitness activities or team sports where watches cannot be worn. Your heart rate monitor automatically sends your stored heart rate data to your Forerunner device when you save your activity. Your heart rate monitor must be active and within range (3 m) of the device while data is uploaded.

### Caring for the Heart Rate Monitor

#### NOTICE

A buildup of sweat and salt on the strap can decrease the ability of the heart rate monitor to report accurate data.

- Rinse the heart rate monitor after every use.
- Hand wash the heart rate monitor after every seven uses or one pool swim, using a tiny amount of mild detergent, such as dishwashing liquid.  
**NOTE:** Using too much detergent may damage the heart rate monitor.
- Do not put the heart rate monitor in a washing machine or dryer.
- When drying the heart rate monitor, hang it up or lay it flat.

### Foot Pod

Your device is compatible with the foot pod. You can use the foot pod to record pace and distance instead of using GPS when you are training indoors or when your GPS signal is weak. The foot pod is on standby and ready to send data (like the heart rate monitor).

After 30 minutes of inactivity, the foot pod powers off to conserve the battery. When the battery is low, a message appears on your device. Approximately five hours of battery life remain.

### Foot Pod Calibration

The foot pod is self-calibrating. The accuracy of the speed and distance data improves after a few outdoor runs using GPS.

### Situational Awareness

Your Forerunner device can be used with the Varia Vision™ device, Varia™ smart bike lights, and rearview radar to improve situational awareness. See the owner's manual for your Varia device for more information.

**NOTE:** You may need to update the Forerunner software before pairing Varia devices ([Updating the Software, page 8](#)).

### Tips for Erratic Heart Rate Data

If the heart rate data is erratic or does not appear, you can try these tips.

- Reapply water to the electrodes and contact patches (if applicable).
- Tighten the strap on your chest.
- Warm up for 5 to 10 minutes.
- Follow the care instructions ([Caring for the Heart Rate Monitor, page 6](#)).
- Wear a cotton shirt or thoroughly wet both sides of the strap. Synthetic fabrics that rub or flap against the heart rate monitor can create static electricity that interferes with heart rate signals.
- Move away from sources that can interfere with your heart rate monitor.

Sources of interference may include strong electromagnetic fields, some 2.4 GHz wireless sensors, high-voltage power lines, electric motors, ovens, microwave ovens, 2.4 GHz cordless phones, and wireless LAN access points.

## Customizing Your Device

### Activity Profiles

Activity profiles are a collection of settings that optimize your device based on how you are using it. For example, the settings and data screens are different when you are using the device for running than for riding your bike.

When you are using a profile and you change settings such as data fields or alerts, the changes are saved automatically as part of the profile.

### Activity Settings

These settings allow you to customize your device based on your training needs. For example, you can customize data screens and enable alerts and training features.

### Alerts

You can use alerts to train toward specific heart rate, pace, time, distance, cadence, and calories goals and to set run/walk time intervals.

## Device Information

### Charging the Device

#### ⚠ WARNING

This device contains a lithium-ion battery. See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

#### NOTICE

To prevent corrosion, thoroughly clean and dry the contacts and the surrounding area before charging or connecting to a computer. Refer to the cleaning instructions in the appendix.

- 1 Align the charger posts with the contacts on the back of the device, and press the charger ① until it clicks.



- 2 Plug the USB cable into a USB port on your computer.
- 3 Charge the device completely.

### Specifications

#### Forerunner Specifications

Battery type	Rechargeable, built-in lithium-ion battery
Battery life, watch mode	Up to 13 wk. Up to 12 wk. with activity tracking Up to 6 wk. with activity tracking and smartphone notifications Up to 16 days with activity tracking, smartphone notifications, and wrist-based heart rate
Battery life, activity mode	Up to 24 hr. in GPS mode Up to 21 hr. in GPS mode and wrist-based heart rate Up to 15 hr. in GPS + GLONASS mode and wrist-based
Battery life, UltraTrac mode	Up to 40 hr. Up to 35 hr. with wrist-based heart rate
Water rating	Swim, 5 ATM*
Operating temperature range	From -20° to 60°C (from -4° to 140°F)
Charging temperature range	From 0° to 45°C (from 32° to 113°F)
Radio frequency/protocol	2.4 GHz ANT+ wireless communications protocol Bluetooth Smart wireless technology Wi-Fi® wireless technology

\*The device withstands pressure equivalent to a depth of 50 m. For more information, go to [www.garmin.com/waterrating](http://www.garmin.com/waterrating).

#### HRM-Swim Specifications and HRM-Tri Specifications

Battery type	User-replaceable CR2032 (3 V)
HRM-Swim battery life	Up to 18 mo. (approximately 3 hr./wk.)
HRM-Tri battery life	Up to 10 mo. for triathlon training (approximately 1 hr./day)
Operating temperature range	From -10° to 50°C (from 14° to 122°F)
Radio frequency/protocol	2.4 GHz ANT+ wireless communications protocol
Water rating	Swim, 5 ATM*

\*The device withstands pressure equivalent to a depth of 50 m. For more information, go to [www.garmin.com/waterrating](http://www.garmin.com/waterrating).

### HRM-Run Specifications

Battery type	User-replaceable CR2032, 3 V
Battery life	1 yr. (approximately 1 hr./day)
Operating temperature range	From -10° to 50°C (from 14° to 122°F)
Radio frequency/protocol	2.4 GHz ANT+ wireless communications protocol
Water rating	5 ATM*

\*The device withstands pressure equivalent to a depth of 50 m. For more information, go to [www.garmin.com/waterrating](http://www.garmin.com/waterrating).

### Device Care

#### NOTICE

Avoid extreme shock and harsh treatment, because it can degrade the life of the product.

Avoid pressing the keys under water.

Do not use a sharp object to clean the device.

Avoid chemical cleaners, solvents, and insect repellents that can damage plastic components and finishes.

Thoroughly rinse the device with fresh water after exposure to chlorine, salt water, sunscreen, cosmetics, alcohol, or other harsh chemicals. Prolonged exposure to these substances can damage the case.

Do not store the device where prolonged exposure to extreme temperatures can occur, because it can cause permanent damage.

### Cleaning the Device

- 1 Wipe the device using a cloth dampened with a mild detergent solution.
- 2 Wipe it dry.

After cleaning, allow the device to dry completely.

### User Replaceable Batteries

#### ⚠ WARNING

Do not use a sharp object to remove batteries.

Keep the battery away from children.

Never put batteries in mouth. If swallowed, contact your physician or local poison control center.

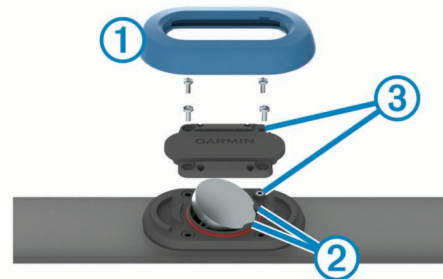
Replaceable coin cell batteries may contain perchlorate material. Special handling may apply. See [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate).

#### ⚠ CAUTION

Contact your local waste disposal department to properly recycle the batteries.

### Replacing the HRM-Swim Battery and the HRM-Tri Battery

- 1 Remove the sleeve ① from the heart rate monitor module.



- 2 Use a small Phillips (00) screwdriver to remove the four screws on the front of the module.
- 3 Remove the cover and battery.
- 4 Wait 30 seconds.

- 5 Insert the new battery under the two plastic tabs ② with the positive side facing up.

**NOTE:** Do not damage or lose the O-ring gasket.

The O-ring gasket should remain around the outside of the raised plastic ring.

- 6 Replace the front cover and the four screws.  
Observe the orientation of the front cover. The raised screw ③ should fit in the matching raised screw hole on the front cover.

**NOTE:** Do not overtighten.

- 7 Replace the sleeve.

After you replace the heart rate monitor battery, you may need to pair it with the device again.

## Troubleshooting

### Support and Updates

Garmin Express™ ([www.garmin.com/express](http://www.garmin.com/express)) provides easy access to these services for Garmin devices.

- Product registration
- Product manuals
- Software updates
- Data uploads to Garmin Connect

### Getting More Information

- Go to [www.garmin.com/support](http://www.garmin.com/support) for additional manuals, articles, and software updates.
- Go to [www.garmin.com/intosports](http://www.garmin.com/intosports).
- Go to [www.garmin.com/learningcenter](http://www.garmin.com/learningcenter).
- Go to <http://buy.garmin.com>, or contact your Garmin dealer for information about optional accessories and replacement parts.

### Acquiring Satellite Signals

The device may need a clear view of the sky to acquire satellite signals. The time and date are set automatically based on the GPS position.

- 1 Go outdoors to an open area.  
The front of the device should be oriented toward the sky.
- 2 Wait while the device locates satellites.  
It may take 30–60 seconds to locate satellite signals.

### Improving GPS Satellite Reception

- Frequently sync the device to your Garmin Connect account:
  - Connect your device to a computer using the USB cable and the Garmin Express application.
  - Sync your device to the Garmin Connect Mobile app using your Bluetooth enabled smartphone.
  - Connect your device to your Garmin Connect account using a Wi-Fi wireless network.

While connected to your Garmin Connect account, the device downloads several days of satellite data, allowing it to quickly locate satellite signals.

- Take your device outside to an open area away from tall buildings and trees.
- Remain stationary for a few minutes.

### Resetting the Device

If the device stops responding, you may need to reset it.

**NOTE:** Resetting the device may erase your data or settings.

- 1 Hold ⏻ for 15 seconds.

The device turns off.

- 2 Hold ⏻ for one second to turn on the device.

### Updating the Software

Before you can update your device software, you must have a Garmin Connect account, and you must download the Garmin Express application.

- 1 Connect the device to your computer using the USB cable.  
When new software is available, Garmin Express sends it to your device.
- 2 Follow the on-screen instructions.
- 3 Do not disconnect your device from the computer during the update process.

**NOTE:** If you have already used Garmin Express to set up your device with Wi-Fi connectivity, Garmin Connect can automatically download available software updates to your device when it connects using Wi-Fi.

### My daily step count does not appear

The daily step count is reset every night at midnight.

If dashes appear instead of your step count, allow the device to acquire satellite signals and set the time automatically.

### My device does not beep in cold weather

For optimal performance in cold weather, the device automatically turns off key tones and alert tones.

## Appendix

### Software License Agreement

BY USING THE DEVICE, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT. PLEASE READ THIS AGREEMENT CAREFULLY.

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## Viewing Device Information

You can view device information, such as the unit ID, software version, regulatory information, and license agreement.

- 1 Hold **MENU**.
- 2 Select **Settings > About**.

## Viewing Regulatory and Compliance Information

- 1 Hold **MENU**.
- 2 Select **Settings > About**.
- 3 Select **DOWN** until regulatory information appears.

## About Heart Rate Zones

Many athletes use heart rate zones to measure and increase their cardiovascular strength and improve their level of fitness. A heart rate zone is a set range of heartbeats per minute. The five commonly accepted heart rate zones are numbered from 1 to 5 according to increasing intensity. Generally, heart rate zones are calculated based on percentages of your maximum heart rate.

## Heart Rate Zone Calculations

Zone	% of Maximum Heart Rate	Perceived Exertion	Benefits
1	50–60%	Relaxed, easy pace, rhythmic breathing	Beginning-level aerobic training, reduces stress
2	60–70%	Comfortable pace, slightly deeper breathing, conversation possible	Basic cardiovascular training, good recovery pace
3	70–80%	Moderate pace, more difficult to hold conversation	Improved aerobic capacity, optimal cardiovascular training
4	80–90%	Fast pace and a bit uncomfortable, breathing forceful	Improved anaerobic capacity and threshold, improved speed
5	90–100%	Sprinting pace, unsustainable for long	Anaerobic and muscular endurance,

## VO2 Max. Standard Ratings

These tables include standardized classifications for VO2 max. estima

Males	Percentile	20–29	30–39	40–49	50–59	60–69	70–79
Superior	95	55.4	54	52.5	48.9	45.7	42.1
Excellent	80	51.1	48.3	46.4	43.4	39.5	36.7
Good	60	45.4	44	42.4			32.3
Fair	40	41.7	40.5	38.5		32.3	29.4
Poor	0–40	<41.7	<40.5	<38.5		<32.3	<29.4

Females	Percentile	20–29	30–39	40–49	50–59	60–69	70–79
Superior	95	49.6	47.4	45.3			
Excellent	80	43.9	42.4	39.7			
Good	60	39.5	37.8	36.3		30	28.1
Fair	40	36.1	34.4	33		27.5	25.9
Poor	0–40	<36.1	<34.4	<33			

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## FTP Ratings

These tables include classifications for functional threshold power (FTP) estimates by gender.

Males	Watts per Kilogram (W/kg)
Superior	5.05 and greater
Excellent	From 3.93 to 5.04
Good	From 2.79 to 3.92

Males	Watts per Kilogram (W/kg)
Fair	From 2.23 to 2.78
Untrained	Less than 2.23

Females	Watts per Kilogram (W/kg)
Superior	4.30 and greater
Excellent	From 3.33 to 4.29
Good	From 2.36 to 3.32

Females	Watts per Kilogram (W/kg)
Fair	From 1.90 to 2.35
Untrained	Less than 1.90

FTP ratings are based on research by Hunter Allen and Andrew Coggan, PhD, *Training and Racing with a Power Meter* (Boulder, CO: VeloPress, 2010).

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