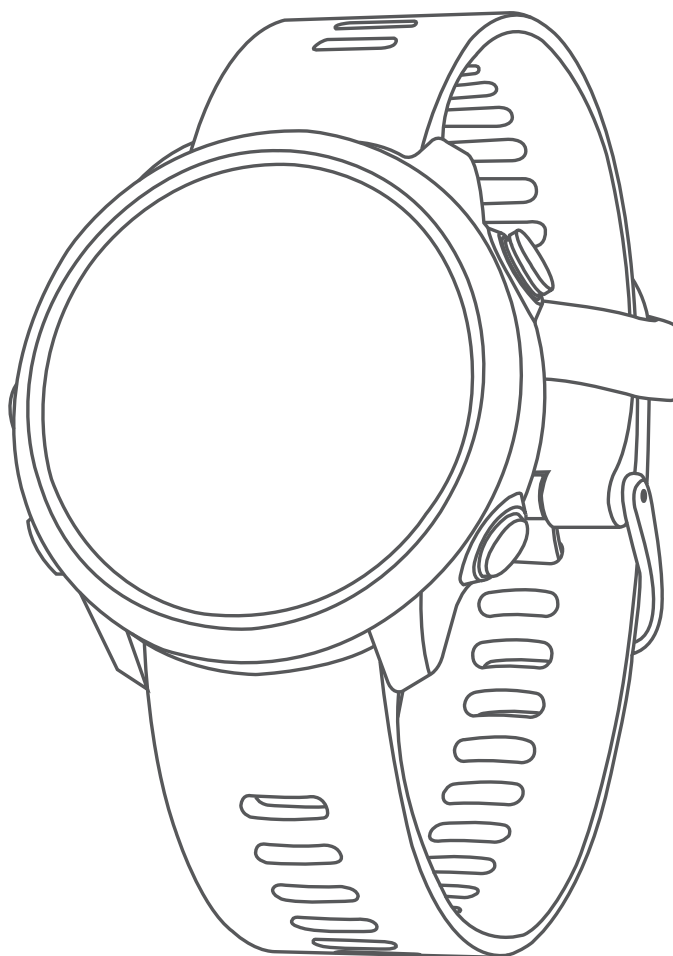


**GARMIN®**



# FORERUNNER® 645/645 MUSIC

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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



①	LIGHT	Select to turn the device on. Select to turn the backlight on and off. Hold to view the controls menu.
②	START STOP	Select to start and stop the timer. Select to choose an option or to acknowledge a message.
③	BACK	Select to return to the previous screen. Select to record a lap during an activity.
④	DOWN	Select to scroll through the widgets, data screens, options, and settings. Hold for music controls on a Forerunner 645 Music.
⑤	UP	Select to scroll through the widgets, data screens, options, and settings. Hold to view the menu.

## GPS Status and Status Icons

The GPS status ring and icons temporarily overlay each data screen. For outdoor activities, the status ring turns green when GPS is ready. A flashing icon means the device is searching for a signal. A solid icon means the signal was found or the sensor is connected.

GPS	GPS status
	Battery status
	Smartphone connection status
	Wi-Fi® technology status
	Heart rate status
	Foot pod status
	Running Dynamics Pod status
	Speed and cadence sensor status
	Bike lights status
	Bike radar status
	tempe™ sensor status
	VIRB® camera status

## Pairing Your Smartphone with Your Device

To use the connected features of the Forerunner device, it must be paired directly through the Garmin Connect™ Mobile app, instead of from the Bluetooth® settings on your smartphone.

- 1 From the app store on your smartphone, install and open the Garmin Connect Mobile app.

- 2 Bring your smartphone within 10 m (33 ft.) of your device.

- 3 Select **LIGHT** to turn on the device.

The first time you turn on the device, it is in pairing mode.

**TIP:** You can hold LIGHT and select to manually enter pairing mode.

- 4 Select an option to add your device to your Garmin Connect account:

- If this is the first time you are pairing a device with the Garmin Connect Mobile app, follow the on-screen instructions.
- If you already paired another device with the Garmin Connect Mobile app, from the or menu, select **Garmin Devices > Add Device**, and follow the on-screen instructions.

## Enabling Bluetooth Notifications

Before you can enable notifications, you must pair the Forerunner device with a compatible mobile device ([Pairing Your Smartphone with Your Device](#), page 1).

- 1 Hold **UP**.
- 2 Select **Settings > Phone > Smart Notifications > Status > On**.
- 3 Select **During Activity**.
- 4 Select a notification preference.
- 5 Select a sound preference.
- 6 Select **Not During Activity**.
- 7 Select a notification preference.
- 8 Select a sound preference.
- 9 Select **Timeout**.
- 10 Select the amount of time the alert for a new notification appears on the screen.

## Viewing Notifications

- 1 From the watch face, select **UP** to view the notifications widget.
- 2 Select **START**, and select a notification.
- 3 Select **DOWN** for more options.
- 4 Select **BACK** to return to the previous screen.

## Managing Notifications

You can use your compatible smartphone to manage notifications that appear on your Forerunner device.

Select an option:

- If you are using an Apple® smartphone, use the notifications settings on your smartphone to select the items to show on the device.
- If you are using a smartphone with Android™, from the Garmin Connect Mobile app, select **Settings > Smart Notifications**.

## Playing Audio Prompts on Your Smartphone During Your Activity

Before you can set up audio prompts, you must have a smartphone with the Garmin Connect Mobile app paired to your Forerunner device.

You can set the Garmin Connect Mobile app to play motivational status announcements on your smartphone during a run or other activity. Audio prompts include the lap number and lap time, pace or speed, and heart-rate data. During an audio prompt, the Garmin Connect mobile app mutes the primary audio of the smartphone to play the announcement. You can customize the volume levels on the Garmin Connect Mobile app.


**NOTE:** If you have a Forerunner 645 Music device, you can enable audio prompts on the device through your connected headphones, without using a connected smartphone ([Playing](#)

*Audio Prompts on Your Connected Headphones During an Activity, page 4).*

**NOTE:** The Lap Alert audio prompt is enabled by default.

- 1 From the settings in the Garmin Connect Mobile app, select **Garmin Devices**.
- 2 Select your device.
- 3 Select **Activity Options > Audio Prompts**.

#### Turning Off the Bluetooth Smartphone Connection

- 1 Hold **LIGHT** to view the controls menu.
- 2 Select  to turn off the Bluetooth smartphone connection on your Forerunner device.  
Refer to the owner's manual for your mobile device to turn off Bluetooth wireless technology on your mobile device.

#### Turning On and Off Smartphone Connection Alerts

You can set the Forerunner device to alert you when your paired smartphone connects and disconnects using Bluetooth wireless technology.

**NOTE:** Smartphone connection alerts are turned off by default.

- 1 Hold **UP**.
- 2 Select **Settings > Phone > Alerts**.

## Viewing the Controls Menu

The controls menu contains options, such as opening the Garmin Pay™ wallet, turning on do not disturb mode, and turning the device off.

**NOTE:** You can add, reorder, and remove the options in the controls menu (*Customizing the Controls Menu, page 20*).

- 1 From any screen, hold **LIGHT**.



- 2 Select **UP** or **DOWN** to scroll through the options.

## Going for a Run

The first fitness activity you record on your device can be a run, ride, or any outdoor activity. You may need to charge the device before starting the activity (*Charging the Device, page 24*).

- 1 Select **START**, and select an activity.
- 2 Go outside, and wait while the device locates satellites.
- 3 Select **START** to start the timer.
- 4 Go for a run.



**NOTE:** On a Forerunner 645 Music, hold **DOWN** while in an activity to open the music controls (*Music Playback Controls, page 15*).

- 5 After you complete your run, select **STOP** to stop the timer.
- 6 Select an option:
  - Select **Resume** to restart the timer.

- Select **Save** to save the run and reset the timer. You can select the run to view a summary.



- Select **Resume Later** to suspend the run and continue recording later.
- Select **Lap** to mark a lap.
- Select **Discard > Yes** to delete the run.

## Activities and Apps

Your device can be used for indoor, outdoor, athletic, and fitness activities. When you start an activity, the device displays and records sensor data. You can save activities and share them with the Garmin Connect community.

You can also add Connect IQ™ activities and apps to your device using the Connect IQ Mobile app (*Connect IQ Features, page 14*).

For more information about activity tracking and fitness metric accuracy, go to [garmin.com/ataccuracy](http://garmin.com/ataccuracy).

## Starting an Activity

When you start an activity, GPS turns on automatically (if required).

- 1 Press **START**.
- 2 Select an activity.  
**NOTE:** Activities set as favorites appear first in the list (*Customizing Your Activity List, page 20*).
- 3 If the activity requires GPS signals, go outside to an area with a clear view of the sky.  
**TIP:** If **GPS** appears in gray text or on a gray background, the activity does not require GPS signals.
- 4 Wait until **Ready** appears on the screen.  
The device is ready after it establishes your heart rate, acquires GPS signals (if required), and connects to your wireless sensors (if required).
- 5 Press **START** to start the activity timer.

The device records activity data only while the activity timer is running.

**NOTE:** On a Forerunner 645 Music, hold **DOWN** while in an activity to open the music controls (*Music Playback Controls, page 15*).

## Tips for Recording Activities

- Charge the device before starting an activity (*Charging the Device, page 24*).
- Select **BACK** to record laps.
- Select **UP** or **DOWN** to view additional data pages.

## Stopping an Activity

- 1 Select **STOP**.
- 2 Select an option:
  - To resume your activity, select **Resume**.
  - To save the activity and return to watch mode, select **Save**.
  - To suspend your activity and resume it at a later time, select **Resume Later**.



- To mark a lap, select **Lap**.
- To navigate back to the starting point of your activity along the path you traveled, select **Back to Start > TracBack**.  
**NOTE:** This feature is available only for activities that use GPS.
- To navigate back to the starting point of your activity by the most direct path, select **Back to Start > Straight Line**.  
**NOTE:** This feature is available only for activities that use GPS.
- To discard the activity and return to watch mode, select **Discard > Yes**.  
**NOTE:** After stopping the activity, the device saves it automatically after 30 minutes.

## Adding an Activity

Your device comes preloaded with a number of common indoor and outdoor activities. You can add these activities to your activity list.

- 1 Select **START**.
- 2 Select **Add**.
- 3 Select an activity from the list.
- 4 Select **Yes** to add the activity to your list of favorites.
- 5 Select a location in the activity list.
- 6 Press **START**.

## Creating a Custom Activity

- 1 From the watch face, select **START > Add**.
- 2 Select an option:
  - Select **Copy Activity** to create your custom activity starting from one of your saved activities.
  - Select **Other** to create a new custom activity.
- 3 If necessary, select an activity type.
- 4 Select a name or enter a custom name.  
Duplicate activity names include a number, for example: Bike(2).
- 5 Select an option:
  - Select an option to customize specific activity settings. For example, you can select an accent color or customize the data screens.
  - Select **Done** to save and use the custom activity.
- 6 Select **Yes** to add the activity to your list of favorites.

## 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).

## Outdoor Activities

The Forerunner device comes preloaded with outdoor activities, such as running and cycling. GPS is turned on for outdoor activities. You can add new activities based on default activities,

such as walking or rowing. You can also add custom activities to your device ([Creating a Custom Activity, page 3](#)).

## Swimming

**NOTE:** The device cannot record wrist heart rate data while swimming.

### 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.

### Stroke Types

Stroke type identification is available only for pool swimming. Your stroke type is identified at the end of a length. Stroke types appear when you are viewing interval history. You can also select stroke type as a custom data field ([Customizing the Data Screens, page 20](#)).

Free	Freestyle
Back	Backstroke
Breast	Breaststroke
Fly	Butterfly
Mixed	More than one stroke type in an interval
Drill	Used with drill logging ( <a href="#">Training with the Drill Log, page 3</a> )

### Tips for Swimming Activities

- Before starting a pool swimming activity, follow the on-screen instructions to select your pool size or enter a custom size.  
The next time you start a pool swimming activity, the device uses this pool size. You can hold UP, select the activity settings, and select Pool Size to change the size.
- Select **BACK** to record a rest during pool swimming.  
The device automatically records swim intervals and lengths for pool swimming.

### Resting During Pool Swimming

The default rest screen displays two rest timers. It also displays time and distance for the last completed interval.

**NOTE:** Swim data is not recorded during a rest.

- 1 During your swim activity, select **BACK** to start a rest.  
The display reverses to white text on a black background, and the rest screen appears.
- 2 During a rest, select **UP** or **DOWN** to view other data screens (optional).
- 3 Select **BACK**, and continue swimming.
- 4 Repeat for additional rest intervals.

### Training with the Drill Log

The drill log feature is available only for pool swimming. You can use the drill log feature to manually record kick sets, one-arm swimming, or any type of swimming that is not one of the four major strokes.

- 1 During your pool swim activity, select **UP** or **DOWN** to view the drill log screen.
- 2 Select **BACK** to start the drill timer.
- 3 After you complete a drill interval, select **BACK**.  
The drill timer stops, but the activity timer continues to record the entire swim session.
- 4 Select a distance for the completed drill.

Distance increments are based on the pool size selected for the activity profile.

**5** Select an option:

- To start another drill interval, select **BACK**.
- To start a swim interval, select **UP** or **DOWN** to return to the swim training screens.

## Viewing Your Ski Runs

Your device records the details of each skiing or snowboarding run using the auto run feature. This feature is turned on by default for downhill skiing and snowboarding. It automatically records new ski runs based on your movement. The timer pauses when you stop moving downhill and when you are on a chairlift. The timer remains paused during the chairlift ride. You can start moving downhill to restart the timer. You can view run details from the paused screen or while the timer is running.

- 1** Start a skiing or snowboarding activity.
- 2** Hold **UP**.
- 3** Select **View Runs**.
- 4** Select **UP** and **DOWN** to view details of your last run, your current run, and your total runs.

The run screens include time, distance traveled, maximum speed, average speed, and total descent.

## Playing Audio Prompts on Your Connected Headphones During an Activity

You can set a Forerunner 645 Music to play motivational status announcements on your connected headphones during a run or other activity. During an audio prompt, the device mutes the audio of the device to play the announcement.

**NOTE:** This feature is not available for all activities.

- 1** Hold **UP**.
- 2** Select **Settings > Audio Prompts**.
- 3** Select an option:
  - To hear a prompt for each lap, select **Lap Alert**.  
**NOTE:** The **Lap Alert** audio prompt is enabled by default.
  - To customize prompts with your pace and speed information, select **Pace/Speed Alert**.
  - To customize prompts with your heart rate information, select **Heart Rate Alert**.
  - To hear prompts when you start and stop the timer, including the Auto Pause® feature, select **Timer Events**.
  - To change the language or the dialect of the voice prompts, select **Dialect**.

# Training

## 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.

### Following a Workout From the Web

Before you can download a workout from Garmin Connect, you must have a Garmin Connect account ([Garmin Connect](#), page 17).

- 1** Connect the device to your computer.
- 2** Go to [www.garminconnect.com](http://www.garminconnect.com).
- 3** Create and save a new workout.

- 4** Select **Send to Device**, and follow the on-screen instructions.

- 5** Disconnect the device.

## Starting a Workout

Before you can start a workout, you must download a workout from your Garmin Connect account.

- 1** From the watch face, select **START**.
- 2** Select an activity.
- 3** Hold **UP**.
- 4** Select **Training > My Workouts**.
- 5** Select a workout.

**NOTE:** Only workouts that are compatible with the selected activity appear in the list.

- 6** Select **Do Workout**.
- 7** Select **START** to start the timer.

After you begin a workout, the device displays each step of the workout, step notes (optional), the target (optional), and the current workout data.

## 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 17).

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 **⋮ > Send Workouts to Device**, 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.

### Creating an Interval Workout

- 1** From the watch face, select **START**.
- 2** Select an activity.
- 3** Hold **UP**.
- 4** Select **Training > Intervals > Edit > Interval > Type**.
- 5** Select **Distance**, **Time**, or **Open**.  
**TIP:** You can create an open-ended interval by selecting the **Open** option.
- 6** Select **Duration**, enter a distance or time interval value for the workout, and select **✓**.
- 7** Select **BACK**.
- 8** Select **Rest > Type**.
- 9** Select **Distance**, **Time**, or **Open**.
- 10** If necessary, enter a distance or time value for the rest interval, and select **✓**.



11 Select **BACK**.

12 Select one or more options:

- To set the number of repetitions, select **Repeat**.
- To add an open-ended warm up to your workout, select **Warm Up > On**.
- To add an open-ended cool down to your workout, select **Cool Down > On**.

### Starting an Interval Workout

- 1 From the watch face, select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select **Training > Intervals > Do Workout**.
- 5 Select **START** to start the timer.
- 6 When your interval workout has a warm up, select **BACK** to begin the first interval.
- 7 Follow the on-screen instructions.

After you complete all of the intervals, a message appears.

### Stopping an Interval Workout

- At any time, select **BACK** to stop the current interval or rest period and transition to the next interval or rest period.
- After all intervals and rest periods are complete, select **BACK** to end the interval workout and transition to a timer that can be used for cool down.
- At any time, select **STOP** to stop the timer. You can resume the timer or end the interval workout.

## Using Virtual Partner®

The Virtual Partner feature is a training tool designed to help you meet your goals. You can set a pace for the Virtual Partner and race against it.

**NOTE:** This feature is not available for all activities.

- 1 From the watch face, select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select the activity settings.
- 5 Select **Data Screens > Add New > Virtual Partner**.
- 6 Enter a pace or speed value.
- 7 Start your activity ([Starting an Activity, page 2](#)).
- 8 Select **UP** or **DOWN** to scroll to the Virtual Partner screen and see who is leading.



## Setting a Training Target

The training target feature works with the Virtual Partner feature so you can train toward a set distance, distance and time, distance and pace, or distance and speed goal. During your training activity, the device gives you real-time feedback about how close you are to achieving your training target.

- 1 From the watch face, select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select **Training > Set a Target**.

5 Select an option:

- Select **Distance Only** to select a preset distance or enter a custom distance.
- Select **Distance and Time** to select a distance and time target.
- Select **Distance and Pace** or **Distance and Speed** to select a distance and pace or speed target.

The training target screen appears and displays your estimated finish time. The estimated finish time is based on your current performance and the time remaining.

6 Select **START** to start the timer.

### Cancelling a Training Target

- 1 During an activity, hold **UP**.
- 2 Select **Cancel Target > Yes**.

## Racing a Previous Activity

You can race a previously recorded or downloaded activity. This feature works with the Virtual Partner feature so you can see how far ahead or behind you are during the activity.

**NOTE:** This feature is not available for all activities.

- 1 From the watch face, select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select **Training > Race an Activity**.
- 5 Select an option:
  - Select **From History** to select a previously recorded activity from your device.
  - Select **Downloaded** to select an activity you downloaded from your Garmin Connect account.
- 6 Select the activity.

The Virtual Partner screen appears indicating your estimated finish time.
- 7 Select **START** to start the timer.
- 8 After you complete your activity, select **START > Save**.

## Personal Records

When you complete an activity, the device displays any new personal records you achieved during that activity. Personal records include your fastest time over several typical race distances and longest run or ride.

### Viewing Your Personal Records

- 1 Hold **UP**.
- 2 Select **History > Records**.
- 3 Select a sport.
- 4 Select a record.
- 5 Select **View Record**.

### Restoring a Personal Record

You can set each personal record back to the one previously recorded.

- 1 Hold **UP**.
- 2 Select **History > Records**.
- 3 Select a sport.
- 4 Select a record to restore.
- 5 Select **Previous > Yes**.

**NOTE:** This does not delete any saved activities.

### Clearing a Personal Record

- 1 Hold **UP**.
- 2 Select **History > Records**.

- 3 Select a sport.
- 4 Select a record to delete.
- 5 Select **Clear Record > Yes**.  
**NOTE:** This does not delete any saved activities.

### Clearing All Personal Records

- 1 Hold **UP**.
- 2 Select **History > Records**.  
**NOTE:** This does not delete any saved activities.
- 3 Select a sport.
- 4 Select **Clear All Records > Yes**.  
The records are deleted for that sport only.

## Segments

You can send running or cycling segments from your Garmin Connect account to your device. After a segment is saved to your device, you can race a segment, trying to match or exceed your personal record or other participants who have raced the segment.

**NOTE:** When you download a course from your Garmin Connect account, you can download all of the available segments in the course.

### Strava™ Segments

You can download Strava segments to your Forerunner device. Follow Strava segments to compare your performance with your past rides, friends, and pros who have ridden the same segment.

To sign up for a Strava membership, go to the segments widget in your Garmin Connect account. For more information, go to [www.strava.com](http://www.strava.com).

The information in this manual applies to both Garmin Connect segments and Strava segments.

### Racing a Segment

Segments are virtual race courses. You can race a segment, and compare your performance to past activities, others' performance, connections in your Garmin Connect account, or other members of the running or cycling communities. You can upload your activity data to your Garmin Connect account to view your segment position.

**NOTE:** If your Garmin Connect account and Strava account are linked, your activity is automatically sent to your Strava account so you can review the segment position.

- 1 Select **START**.
- 2 Select an activity.
- 3 Go for a run or ride.  
When you approach a segment, a message appears, and you can race the segment.
- 4 Start racing the segment.  
A message appears when the segment is complete.

### Viewing Segment Details

- 1 Select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select **Training > Segments**.
- 5 Select a segment.
- 6 Select an option:
  - Select **Race Time** to view the time and average speed or pace for the segment leader.
  - Select **Map** to view the segment on the map.
  - Select **Elevation Plot** to view an elevation plot of the segment.

### Setting a Segment to Adjust Automatically

You can set your device to automatically adjust the target race time of a segment based on your performance during the segment.

**NOTE:** This setting is enabled for all segments by default.

- 1 Select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select **Training > Segments > Auto Effort**.

## Using the Metronome

The metronome feature plays tones at a steady rhythm to help you improve your performance by training at a faster, slower, or more consistent cadence.

**NOTE:** This feature is not available for all activities.

- 1 From the watch face, select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select the activity settings.
- 5 Select **Metronome > Status > On**.
- 6 Select an option:
  - Select **Beats Per Minute** to enter a value based on the cadence you want to maintain.
  - Select **Alert Frequency** to customize the frequency of the beats.
  - Select **Sounds** to customize the metronome tone and vibration.
- 7 If necessary, select **Preview** to listen to the metronome feature before you run.
- 8 Go for a run (*Going for a Run*, page 2).  
The metronome starts automatically.
- 9 During your run, select **UP** or **DOWN** to view the metronome screen.
- 10 If necessary, hold **UP** to change the metronome settings.

## Setting Up Your User Profile

You can update your gender, birth year, height, weight, and heart rate zone settings. The device uses this information to calculate accurate training data.

- 1 Hold **UP**.
- 2 Select **Settings > User Profile**.
- 3 Select an option.

### Fitness Goals

Knowing your heart rate zones can help you measure and improve your fitness by understanding and applying these principles.

- Your heart rate is a good measure of exercise intensity.
- Training in certain heart rate zones can help you improve cardiovascular capacity and strength.

If you know your maximum heart rate, you can use the table (*Heart Rate Zone Calculations*, page 7) to determine the best heart rate zone for your fitness objectives.

If you do not know your maximum heart rate, use one of the calculators available on the Internet. Some gyms and health centers can provide a test that measures maximum heart rate. The default maximum heart rate is 220 minus your age.

### 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.

### Setting Your Heart Rate Zones

The device uses your user profile information from the initial setup to determine your default heart rate zones. You can set separate heart rate zones for sport profiles, such as running, cycling, and swimming. For the most accurate calorie data during your activity, set your maximum heart rate. You can also set each heart rate zone and enter your resting heart rate manually. You can manually adjust your zones on the device or using your Garmin Connect account.

- 1 Hold **UP**.
- 2 Select **Settings > User Profile > Heart Rate**.
- 3 Select **Max. HR**, and enter your maximum heart rate.  
You can use the Auto Detect feature to automatically record your maximum heart rate during an activity (*Detecting Performance Measurements Automatically*, page 11).
- 4 Select **LTHR > Enter Manually**, and enter your lactate threshold heart rate.  
You can perform a guided test to estimate your lactate threshold (*Lactate Threshold*, page 13). You can use the Auto Detect feature to automatically record your lactate threshold during an activity (*Detecting Performance Measurements Automatically*, page 11).
- 5 Select **Resting HR**, and enter your resting heart rate.  
You can use the average resting heart rate measured by your device, or you can set a custom resting heart rate.
- 6 Select **Zones > Based On**.
- 7 Select an option:
  - Select **BPM** to view and edit the zones in beats per minute.
  - Select **%Max. HR** to view and edit the zones as a percentage of your maximum heart rate.
  - Select **%HRR** to view and edit the zones as a percentage of your heart rate reserve (maximum heart rate minus resting heart rate).
  - Select **%LTHR** to view and edit the zones as a percentage of your lactate threshold heart rate.
- 8 Select a zone, and enter a value for each zone.
- 9 Select **Add Sport Heart Rate**, and select a sport profile to add separate heart rate zones (optional).
- 10 Repeat steps 3 through 8 to add sport heart rate zones (optional).

### Letting the Device Set Your Heart Rate Zones

The default settings allow the device to detect your maximum heart rate and set your heart rate zones as a percentage of your maximum heart rate.

- Verify that your user profile settings are accurate (*Setting Up Your User Profile*, page 6).
- Run often with the wrist or chest heart rate monitor.
- Try a few heart rate training plans, available from your Garmin Connect account.
- View your heart rate trends and time in zones using your Garmin Connect account.

### 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 period of time, labored breathing	Anaerobic and muscular endurance, increased power

## Activity Tracking

The activity tracking feature records your daily step count, distance traveled, intensity minutes, floors climbed, calories burned, and sleep statistics for each recorded day. Your calories burned includes your base metabolism plus activity calories.

The number of steps taken during the day appears on the steps widget. The step count is updated periodically.

For more information about activity tracking and fitness metric accuracy, go to [garmin.com/ataccuracy](https://garmin.com/ataccuracy).

### Auto Goal

Your device creates a daily step goal automatically, based on your previous activity levels. As you move during the day, the device shows your progress toward your daily goal ①.



If you choose not to use the auto goal feature, you can set a personalized step goal on your Garmin Connect account.

### Using the Move Alert

Sitting for prolonged periods of time can trigger undesirable metabolic state changes. The move alert reminds you to keep moving. After one hour of inactivity, Move! and the red bar appear. Additional segments appear after every 15 minutes of inactivity. The device also beeps or vibrates if audible tones are turned on (*System Settings*, page 22).

Go for a short walk (at least a couple of minutes) to reset the move alert.

### Sleep Tracking

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

**NOTE:** Naps are not added to your sleep statistics. You can use do not disturb mode to turn off notifications and alerts, with the exception of alarms ([Using Do Not Disturb Mode, page 8](#)).

## Using Automated Sleep Tracking

- 1 Wear your device while sleeping.
- 2 Upload your sleep tracking data to the Garmin Connect site ([Garmin Connect, page 17](#)).

You can view your sleep statistics on your Garmin Connect account.

## Using Do Not Disturb Mode

You can use do not disturb mode to turn off the backlight, tone alerts, and vibration alerts. For example, you can use this mode while sleeping or watching a movie.

**NOTE:** You can set your normal sleep hours in the user settings on your Garmin Connect account. You can enable the Sleep Time option in the system settings to automatically enter do not disturb mode during your normal sleep hours ([System Settings, page 22](#)).

- 1 Hold **LIGHT**.
- 2 Select **Do Not Disturb**.

## 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 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.
- Wear your device all day and night for the most accurate resting heart rate.

## Garmin Move IQ™ Events

The Move IQ feature automatically detects activity patterns, such as walking, running, biking, swimming, and elliptical training, for at least 10 minutes. You can view the event type and duration on your Garmin Connect timeline, but they do not appear in your activities list, snapshots, or newsfeed. For more detail and accuracy, you can record a timed activity on your device.

## Activity Tracking Settings

Hold **UP**, and select **Settings > Activity Tracking**.

**Status:** Turns off the activity tracking features.

**Move Alert:** Displays a message and the move bar on the digital watch face and steps screen. The device also beeps or vibrates if audible tones are turned on ([System Settings, page 22](#)).

**Goal Alerts:** Allows you to turn on and off goal alerts, or turn them off only during activities. Goal alerts appear for your daily steps goal, daily floors climbed goal, and weekly intensity minutes goal.

**Move IQ:** Allows you to turn on and off Move IQ events.

## Turning Off Activity Tracking

When you turn off activity tracking, your steps, floors climbed, intensity minutes, sleep tracking, and Move IQ events are not recorded.

- 1 Hold **UP**.
- 2 Select **Settings > Activity Tracking > Status > Off**.

## Heart Rate Features

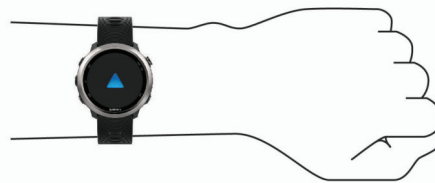
The Forerunner device has a wrist-based heart rate monitor and is also compatible with ANT+® chest heart rate monitors. You can view wrist-based heart rate data on the heart rate widget. When both wrist-based heart rate and ANT+ heart rate data are available, your device uses the ANT+ heart rate data.

## Wrist-based Heart Rate

### Wearing the Device and Heart Rate

- Wear the Forerunner device above your wrist bone.

**NOTE:** The device should be snug but comfortable, and it should not move while running or exercising.



**NOTE:** The heart rate sensor is located on the back of the device.

- See [Tips for Erratic Heart Rate Data, page 8](#) for more information about wrist-based heart rate.
- For more information about the accuracy of wrist-based heart rate, go to [garmin.com/ataccuracy](http://garmin.com/ataccuracy).

### Tips for Erratic Heart Rate Data

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

- Clean and dry your arm before putting on the device.
- Avoid wearing sunscreen, lotion, and insect repellent under the device.
- Avoid scratching the heart rate sensor on the back of the device.
- Wear the device above your wrist bone. The device should be snug but comfortable.
- Wait until the ♥ icon is solid before starting your activity.
- Warm up for 5 to 10 minutes and get a heart rate reading before starting your activity.

**NOTE:** In cold environments, warm up indoors.

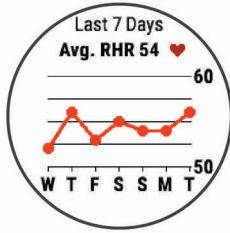
- Rinse the device with fresh water after each workout.

### Viewing the Heart Rate Widget

The widget displays your current heart rate in beats per minute (bpm) and a graph of your heart rate for the last 4 hours.

- 1 From the watch face, select **DOWN**.
- 2 Select **START** to view your average resting heart rate values for the last 7 days.





### Broadcasting Heart Rate Data to Garmin® Devices

You can broadcast your heart rate data from your Forerunner device and view it on paired Garmin devices.

**NOTE:** Broadcasting heart rate data decreases battery life.

1 From the heart rate widget, hold **UP**.

2 Select **Options** > **Broadcast Heart Rate**.

The Forerunner device starts broadcasting your heart rate data, and a heart icon appears.

**NOTE:** You can view only the heart rate widget while broadcasting heart rate data from the heart rate widget.

3 Pair your Forerunner device with your Garmin ANT+ compatible device.

**NOTE:** The pairing instructions differ for each Garmin compatible device. See your owner's manual.

**TIP:** To stop broadcasting your heart rate data, select any key, and select Yes.

### Broadcasting Heart Rate Data During an Activity

You can set up your Forerunner device to broadcast your heart rate data automatically when you begin an activity. For example, you can broadcast your heart rate data to an Edge® device while cycling, or to a VIRB action camera during an activity.

**NOTE:** Broadcasting heart rate data decreases battery life.

1 From the heart rate widget, hold **UP**.

2 Select **Options** > **Broadcast During Activity**.

3 Begin an activity ([Starting an Activity, page 2](#)).

The Forerunner device starts broadcasting your heart rate data in the background.

**NOTE:** There is no indication that the device is broadcasting your heart rate data during an activity.

4 If necessary, pair your Forerunner device with your Garmin ANT+ compatible device.

**NOTE:** The pairing instructions differ for each Garmin compatible device. See your owner's manual.

**TIP:** To stop broadcasting your heart rate data, stop the activity ([Stopping an Activity, page 2](#)).

### Turning Off the Wrist Heart Rate Monitor

The default value for the Wrist Heart Rate setting is Auto. The device automatically uses the wrist-based heart rate monitor unless you pair an ANT+ heart rate monitor to the device.

1 From the heart rate widget, hold **UP**.

2 Select **Options** > **Status** > **Off**.

## Running Dynamics

You can use your compatible Forerunner device paired with the HRM-Run™ accessory or other running dynamics accessory to provide real-time feedback about your running form. If your

### 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

Forerunner device was packaged with the HRM-Run accessory, the devices are already paired.

The running dynamics accessory has an accelerometer 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.

**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 and balance are 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.

### Training with Running Dynamics

Before you can view running dynamics, you must put on the HRM-Run accessory, HRM-Tri™ accessory, or Running Dynamics Pod, and pair it with your device ([Pairing ANT+ Sensors, page 19](#)).

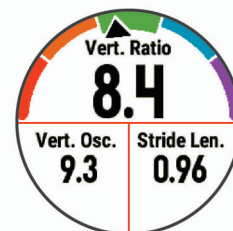
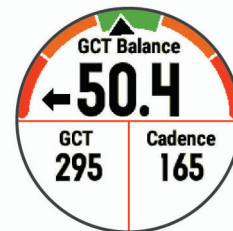
If your Forerunner was packaged with the heart rate monitor, the devices are already paired, and the Forerunner is set to display running dynamics.

1 Select **START**, and select a running activity.

2 Select **START**.

3 Go for a run.

4 Scroll to the running dynamics screens to view your metrics.



5 If necessary, hold **UP** to edit how the running dynamics data appears.



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.

Go to [www.garmin.com/runningdynamics](http://www.garmin.com/runningdynamics) 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	Ground Contact Time Range
Purple	>95	>183 spm	<218 ms
Blue	70–95	174–183 spm	218–248 ms
Green	30–69	164–173 spm	249–277 ms
Orange	5–29	153–163 spm	278–308 ms
Red	<5	<153 spm	>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
Symmetry	Poor	Fair	Good	Fair	Poor
Percent of Other Runners	5%	25%	40%	25%	5%
Ground Contact Time Balance	>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.


### Vertical Oscillation and Vertical Ratio Data

The data ranges for vertical oscillation and vertical ratio are slightly different depending on the sensor and whether it is positioned at the chest (HRM-Tri or HRM-Run accessories) or at the waist (Running Dynamics Pod accessory).

Color Zone	Percentile in Zone	Vertical Oscillation Range at Chest	Vertical Oscillation Range at Waist	Vertical Ratio at Chest	Vertical Ratio at Waist
Purple	>95	<6.4 cm	<6.8 cm	<6.1%	<6.5%
Blue	70–95	6.4–8.1 cm	6.8–8.9 cm	6.1–7.4%	6.5–8.3%
Green	30–69	8.2–9.7 cm	9.0–10.9 cm	7.5–8.6%	8.4–10.0%
Orange	5–29	9.8–11.5 cm	11.0–13.0 cm	8.7–10.1%	10.1–11.9%
Red	<5	>11.5 cm	>13.0 cm	>10.1%	>11.9%

### Tips for Missing Running Dynamics Data

If running dynamics data does not appear, you can try these tips.

- Make sure you have a running dynamics accessory, such as the HRM-Run accessory.  
Accessories with running dynamics have  on the front of the module.
- Pair the running dynamics accessory with your Forerunner device again, according to the instructions.
- If the running dynamics data display shows only zeros, make sure the accessory is worn right-side up.

**NOTE:** Ground contact time and balance appears only while running. It is not calculated while walking.

### Performance Measurements

These performance measurements are estimates that can help you track and understand your training activities and race performances. The measurements require a few activities using wrist-based heart rate or a compatible chest heart rate monitor.

These estimates are provided and supported by Firstbeat. For more information, go to [www.garmin.com/physio](http://www.garmin.com/physio).



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

**Training status:** Training status shows you how your training affects your fitness and performance. Your training status is based on changes to your training load and VO2 max. over an extended time period.

**VO2 max.:** VO2 max. is the maximum volume of oxygen (in milliliters) you can consume per minute per kilogram of body weight at your maximum performance.

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

**Training load:** Training load is the sum of your excess post-exercise oxygen consumption (EPOC) over the last 7 days.

EPOC is an estimate of how much energy it takes for your body to recover after exercise.

**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.

**HRV stress test:** The HRV (heart rate variability) stress test requires a Garmin chest heart rate monitor. The device records 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.

### Turning Off Performance Notifications

Performance notifications are turned on by default. Some performance notifications are alerts that appear upon completion of your activity. Some performance notifications appear during an activity or when you achieve a new performance measurement, such as a new VO2 max. estimate.

- 1 Hold **UP**.
- 2 Select **Settings > Physiological Metrics > Performance Notifications**.
- 3 Select an option.

### Detecting Performance Measurements Automatically

The Auto Detect feature is turned on by default. The device can automatically detect your maximum heart rate, and lactate threshold during an activity.

**NOTE:** The device detects a maximum heart rate only when your heart rate is higher than the value set in your user profile.

- 1 Hold **UP**.
- 2 Select **Settings > Physiological Metrics > Auto Detect**.
- 3 Select an option.

### Training Status

Training status shows you how your training affects your fitness level and performance. Your training status is based on changes to your training load and VO2 max. over an extended time period. You can use your training status to help plan future training and continue improving your fitness level.

**Peaking:** Peaking means that you are in ideal race condition. Your recently reduced training load is allowing your body to recover and fully compensate for earlier training. You should plan ahead, since this peak state can only be maintained for a short time.

**Productive:** Your current training load is moving your fitness level and performance in the right direction. You should plan recovery periods into your training to maintain your fitness level.

**Maintaining:** Your current training load is enough to maintain your fitness level. To see improvement, try adding more variety to your workouts or increasing your training volume.

**Recovery:** Your lighter training load is allowing your body to recover, which is essential during extended periods of hard training. You can return to a higher training load when you feel ready.

**Unproductive:** Your training load is at a good level, but your fitness is decreasing. Your body may be struggling to

recover, so you should pay attention to your overall health including stress, nutrition, and rest.

**Detraining:** Detraining occurs when you are training much less than usual for a week or more, and it is affecting your fitness level. You can try increasing your training load to see improvement.

**Overreaching:** Your training load is very high and counterproductive. Your body needs a rest. You should give yourself time to recover by adding lighter training to your schedule.

**No Status:** The device needs one or two weeks of training history, including activities with VO2 max. results from running or cycling, to determine your training status.

### Tips for Getting Your Training Status

To get the most out of the training status feature, you can try these tips.

- Run outdoors with heart rate at least two times per week, or ride with heart rate and power at least two times per week. After using the device for one week, your training status should be available.
- Record all of your fitness activities on this device, allowing it to learn about your performance.

### 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. The Forerunner device requires wrist-based heart rate or a compatible chest heart rate monitor to display your 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 is provided by FirstBeat. VO2 max. analysis is provided with permission from The Cooper Institute®. For more information, see the appendix ([VO2 Max. Standard Ratings, page 29](#)), and go to [www.CooperInstitute.org](http://www.CooperInstitute.org).

### Recovery Time

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

**NOTE:** The recovery time recommendation uses your VO2 max. estimate and may seem inaccurate at first. The device requires you to complete a few activities to learn about your performance.

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

## Viewing Your Recovery Time

For the most accurate estimate, complete the user profile setup ([Setting Up Your User Profile, page 6](#)), and set your maximum heart rate ([Setting Your Heart Rate Zones, page 7](#)).

1 Go for a run.

2 After your run, select **Save**.

The recovery time appears. The maximum time is 4 days.

**NOTE:** From the watch face, you can select UP or DOWN to view the performance widget, and select START to scroll through the performance measurements to view your recovery time.

## Recovery Heart Rate

If you are training with wrist-based heart rate or a compatible chest 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.

## Training Load

Training load is a measurement of your training volume over the last seven days. It is the sum of your excess post-exercise oxygen consumption (EPOC) measurements for the last seven days. The gauge indicates whether your current load is low, high, or within the optimal range to maintain or improve your fitness level. The optimal range is determined based on your individual fitness level and training history. The range adjusts as your training time and intensity increase or decrease.

## Viewing Your Predicted Race Times

For the most accurate estimate, complete the user profile setup ([Setting Up Your User Profile, page 6](#)), and set your maximum heart rate ([Setting Your Heart Rate Zones, page 7](#)).

Your device uses the VO2 max. estimate ([About VO2 Max. Estimates, page 11](#)) 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.

**NOTE:** The projections may seem inaccurate at first. The device requires a few runs to learn about your running performance.

1 Select **UP** or **DOWN** to view the performance widget.

2 Select **START** to scroll through the performance measurements.

Your projected race times appear for 5K, 10K, half marathon, and marathon distances.

## About Training Effect

Training Effect measures the impact of an activity on your aerobic and anaerobic fitness. Training Effect accumulates during the activity. As the activity progresses, the Training Effect value increases, telling you how the activity has improved your fitness. Training Effect is determined by your user profile information, heart rate, duration, and intensity of your activity.







Aerobic Training Effect uses your heart rate to measure how the accumulated intensity of an exercise affects your aerobic fitness and indicates if the workout had a maintaining or improving effect on your fitness level. Your EPOC accumulated during exercise is mapped to a range of values that account for your fitness level and training habits. Steady workouts at moderate effort or workouts involving longer intervals (>180 sec) have a

positive impact on your aerobic metabolism and result in an improved aerobic Training Effect.

Anaerobic Training Effect uses heart rate and speed to determine how a workout affects your ability to perform at very high intensity. You receive a value based on the anaerobic contribution to EPOC and the type of activity. Repeated high-intensity intervals of 10 to 120 seconds have a highly beneficial impact on your anaerobic capability and result in an improved anaerobic Training Effect.

It is important to know that your Training Effect numbers (from 0.0 to 5.0) may seem abnormally high during your first few activities. It takes several activities for the device to learn your aerobic and anaerobic fitness.

You can add Training Effect as a data field to one of your training screens to monitor your numbers throughout the activity.

Color Zone	Training Effect	Aerobic Benefit	Anaerobic Benefit
	From 0.0 to 0.9	No benefit.	No benefit.
	From 1.0 to 1.9	Minor benefit.	Minor benefit.
	From 2.0 to 2.9	Maintains your aerobic fitness.	Maintains your anaerobic fitness.
	From 3.0 to 3.9	Improves your aerobic fitness.	Improves your anaerobic fitness.
	From 4.0 to 4.9	Highly improves your aerobic fitness.	Highly improves your anaerobic fitness.
	5.0	Overreaching and potentially harmful without enough recovery time.	Overreaching and potentially harmful without enough recovery time.

Training Effect technology is provided and supported by Firstbeat Technologies Ltd. For more information, go to [www.firstbeat.com](http://www.firstbeat.com).

## Viewing Your Heart Rate Variability Stress Score

Before you can perform the heart rate variability (HRV) stress test, you must put on a Garmin chest heart rate monitor and pair it with your device ([Pairing ANT+ Sensors, page 19](#)).

Your HRV stress score is the result of a three-minute test performed while standing still, where the Forerunner device analyzes heart rate variability to determine your overall stress. Training, sleep, nutrition, and general life stress all impact how you perform. The stress score range is 1 to 100, where 1 is a very low stress state, and 100 is a very high stress state. Knowing your stress score can help you decide if your body is ready for a tough training run or yoga.

**TIP:** Garmin recommends that you measure your stress score before you exercise, at approximately the same time, and under the same conditions every day. You can view previous results on your Garmin Connect account.

1 Select **START > DOWN > HRV Stress > START**.

2 Follow the onscreen instructions.

## Performance Condition

As you perform a running activity, 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. It is approximately your real-time percentage deviation from your baseline VO2 max. estimate.

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. 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.

**NOTE:** The device requires a few runs with a heart rate monitor to get an accurate VO2 max. estimate and learn about your running ability (*About VO2 Max. Estimates*, page 11).

### Viewing Your Performance Condition

This feature requires wrist-based heart rate or a compatible chest heart rate monitor.

- 1 Add **Perform. Cond.** to a data screen (*Customizing the Data Screens*, page 20).
- 2 Go for a run or ride.  
After 6 to 20 minutes, your performance condition appears.
- 3 Scroll to the data screen to view your performance condition throughout the run or ride.

### 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 Your Heart Rate Zones*, page 7).

### Performing a Guided Test to Determine Your Lactate Threshold

This feature requires a Garmin chest heart rate monitor. Before you can perform the guided test, you must put on a heart rate monitor and pair it with your device (*Pairing ANT+ Sensors*, page 19).

The device uses your user profile information from the initial setup and your VO2 max. estimate to estimate your lactate threshold. The device will automatically detect your lactate threshold during runs at a steady, high intensity with heart rate.

**TIP:** The device requires a few runs with a chest heart rate monitor to get an accurate maximum heart rate value and VO2 max. estimate. If you are having trouble getting a lactate threshold estimate, try manually lowering your maximum heart rate value.

- 1 From the watch face, select **START**.
- 2 Select an outdoor running activity.  
GPS is required to complete the test.
- 3 Hold **UP**.
- 4 Select **Training > Lactate Threshold Guided Test**.
- 5 Start the timer, and follow the on-screen instructions.  
After you begin your run, the device displays each step duration, the target, and current heart rate data. A message appears when the test is complete.
- 6 After you complete the guided test, stop the timer and save the activity.  
If this is your first lactate threshold estimate, the device prompts you to update your heart rate zones based on your lactate threshold heart rate. For each additional lactate threshold estimate, the device prompts you to accept or decline the estimate.

## Smart Features

### 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/manuals/forerunner645](http://www.garmin.com/manuals/forerunner645).

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

**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.

**GroupTrack:** Allows you join a group using LiveTrack, so others can view your position directly on screen and in real time.

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

**Software updates:** Allows you to update your device software.

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

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

**Connect IQ:** Allows you to extend your device features with new watch faces, widgets, apps, and data fields.

**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.

**Weather updates:** Sends real-time weather conditions and notifications to your device.

**Music controls:** Allows you to control the music player on your smartphone.

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

**Bluetooth sensors:** Allows you to connect Bluetooth compatible sensors, such as a heart rate monitor.

**Find my phone:** Locates your lost smartphone that is paired with your Forerunner device and currently within range.

**Find my watch:** Locates your lost Forerunner device that is paired with your smartphone and currently within range.


### Updating the Software Using Garmin Connect Mobile

Before you can update your device software using the Garmin Connect Mobile app, you must have a Garmin Connect account, and you must pair the device with a compatible smartphone (*Pairing Your Smartphone with Your Device*, page 1).

Synchronize your device with the Garmin Connect Mobile app (*Manually Syncing Data with Garmin Connect Mobile*, page 13).


When new software is available, the Garmin Connect Mobile app automatically sends the update to your device.

### Manually Syncing Data with Garmin Connect Mobile

- 1 Hold **LIGHT** to view the controls menu.
- 2 Select .

### Locating a Lost Mobile Device

You can use this feature to help locate a lost mobile device that is paired using Bluetooth wireless technology and currently within range.

- 1 Hold **LIGHT** to view the controls menu.
- 2 Select .

The Forerunner device begins searching for your paired mobile device. An audible alert sounds on your mobile device, and the Bluetooth signal strength displays on the Forerunner device screen. The Bluetooth signal strength increases as you move closer to your mobile device.

- 3 Select **BACK** to stop searching.

## 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.

**Calories:** Displays your calorie information for the current day.

**Compass:** Displays an electronic compass.

**Floors climbed:** Tracks your floors climbed and progress toward your goal.

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

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

**Last activity:** Displays a brief summary of your last recorded activity, such as your last run, last ride, or last swim.

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

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

**Notifications:** Alerts you to incoming calls, texts, social network updates, and more, based on your smartphone notification settings.

**Performance:** Displays your current training status, training load, VO2 max. estimates, recovery time, FTP estimate, lactate threshold, and predicted race times.

**Steps:** Tracks your daily step count, step goal, and data for the last 7 days.

**Stress:** Displays your stress level and provides a breathing activity to help you relax.

**VIRB controls:** Provides camera controls when you have a VIRB device paired with your Forerunner device.

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

## Viewing the Widgets

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

- From the time of day screen, select **UP** or **DOWN**.  
Available widgets include heart rate and activity tracking. The performance widget requires several activities with heart rate and outdoor runs with GPS.
- Select **START** to view additional options and functions for a widget.

## Viewing the Weather Widget

Weather requires a Bluetooth connection to a compatible smartphone.

- 1 From the watch face, select **UP**.
- 2 Select **START** to view hourly weather data.
- 3 Select **DOWN** to view daily weather data.

## Joining a GroupTrack Session

Before you can join a GroupTrack session, you must have a Garmin Connect account, a compatible smartphone, and the Garmin Connect Mobile app.

These instructions are for joining a GroupTrack session with Forerunner devices. If your connections have other compatible devices, they can see you on the map. You are not able to view other GroupTrack members on your device.

- 1 Go outside, and turn on the Forerunner device.
- 2 Pair your smartphone with the Forerunner device (*Pairing Your Smartphone with Your Device*, page 1).
- 3 From the settings menu in the Garmin Connect Mobile app, select **LiveTrack > GroupTrack**.
- 4 If you have more than one compatible device, select a device for the GroupTrack session.
- 5 Select **Visible to > All Connections**.
- 6 Select **Start LiveTrack**.
- 7 On your Forerunner device, start an activity.

## Tips for Joining GroupTrack Sessions

The GroupTrack feature allows connections in your group to keep track of you using LiveTrack directly on their screens. All members of the group must be your connections in your Garmin Connect account.

- Run outside using GPS.
- Pair your Forerunner device with your smartphone using Bluetooth technology.
- From the settings menu in the Garmin Connect Mobile app, select **Connections** to update the list of connections for your GroupTrack session.
- Make sure all of your connections pair to their smartphones and start a LiveTrack session in the Garmin Connect Mobile app.
- Make sure all your connections are in range (40 km or 25 mi.).

## Connect IQ Features

You can add Connect IQ features to your watch from Garmin and other providers using the Connect IQ 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 features from the Connect IQ Mobile app, you must pair your Forerunner device with your smartphone.

- 1 From the app store on your smartphone, install and open the Connect IQ Mobile app.
- 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.

## Wi-Fi Connected Features

The Forerunner device has Wi-Fi connected features. The Garmin Connect Mobile app is not required for you to use Wi-Fi connectivity.

### Activity uploads to your Garmin Connect account:

Automatically sends your activity to your Garmin Connect account as soon as you finish recording the activity.


**Workouts and training plans:** Allows you to browse for and select workouts and training plans on the Garmin Connect site. The next time your device has a Wi-Fi connection, the files are wirelessly sent to your device.

**Software updates:** Your device downloads and installs the latest software update automatically when a Wi-Fi connection is available.

### Connecting to a Wi-Fi Network

You must connect your device to the Garmin Connect Mobile app on your smartphone before you can connect to a Wi-Fi network.

You can connect the device to a Wi-Fi network to help increase the transfer speed of larger files.

- 1 Move within range of a Wi-Fi network.
- 2 From the Garmin Connect Mobile app, select  or **...**.
- 3 Select **Garmin Devices**, and select your device.
- 4 Select **General > Wi-Fi Networks > Add a Network**.
- 5 Select an available Wi-Fi network, and enter the login details.

## Music


You can control music playback on your paired smartphone using your Forerunner device.

On a Forerunner 645 Music, you can download audio content to your device from your computer or from a third-party provider, so you can listen when your smartphone is not nearby. To listen to audio content stored on your device, you must connect headphones with Bluetooth technology.

You can use the music controls to control music playback on your smartphone or to play music stored on your device.

### Connecting to a Third-Party Provider

Before you can download music or other audio files to your Forerunner 645 Music from a supported third-party provider, you must connect to the provider using the Garmin Connect Mobile app.

- 1 From the Garmin Connect Mobile app, select  or **...**.
- 2 Select **Garmin Devices**, and select your device.
- 3 Select **Music**.
- 4 Select an option:
  - Select a third-party provider, and follow the on-screen instructions.
  - Select **Get Music Apps**, locate a provider, and follow the on-screen instructions.

### Downloading Audio Content from a Third-Party Provider


Before you can download audio content from a third-party provider, you must connect to a Wi-Fi network ([Connecting to a Wi-Fi Network](#), page 15).

- 1 On your Forerunner 645 Music, hold **DOWN** to open the music controls.

- 2 Select **Manage > Music Providers**.
- 3 Select a connected provider.
- 4 Select a playlist or other item to download to the device.
- 5 Select **BACK** until you are prompted to sync with the service, and select **Yes**.

The selected playlists and other items are downloaded to the device.

### Disconnecting from a Third-Party Provider

- 1 From the Garmin Connect Mobile app, select  or **...**.
- 2 Select **Garmin Devices**, and select your device.
- 3 Select **Music**.
- 4 Select an installed third-party provider, and follow the on-screen instructions to disconnect the third-party provider from your device.

## Downloading Personal Audio Content Using Garmin Express™

Before you can send your personal music to your device, you must install Garmin Express on your computer ([www.garmin.com/express](http://www.garmin.com/express)).

You can load your personal .mp3 and .aac files to a Forerunner 645 Music from your computer.

- 1 Connect the device to your computer using the included USB cable.
- 2 On your computer, open Garmin Express, select your device, and select **Music**.
- 3 Select the checkboxes for songs, playlists, and other audio files, and select **Send to Device**.

## Listening to Downloaded Music

- 1 Hold **DOWN** from any screen to open the music controls.
- 2 Connect your headphones with Bluetooth technology ([Connecting Headphones using Bluetooth Technology](#), page 16).
- 3 Select **Source > Watch**.
- 4 Select **Your Library**.
- 5 Select the music you want to play.

**TIP:** Select Play All Songs to start playing all the songs downloaded to the device in shuffle mode.

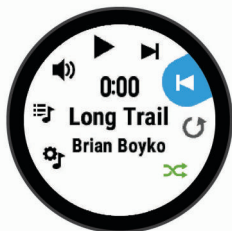
## Controlling Music Playback on a Connected Smartphone

- 1 On your smartphone, start playing a song or playlist.
- 2 Select an option:
  - On a Forerunner 645 Music device, hold **DOWN** from any screen to open the music controls.
  - On a Forerunner 645 device, select **DOWN** to view the music control widget.

**NOTE:** You may need to add the music control widget to your widget loop ([Customizing the Widget Loop](#), page 20).
- 3 On a Forerunner 645 Music device, select **Source > Control Music on Phone**.
- 4 Use the icons to pause and resume playback, skip tracks, and adjust the volume ([Music Playback Controls](#), page 15).

## Music Playback Controls

**NOTE:** Some music playback controls are available on a Forerunner 645 Music device only.



	Select to manage content from third-party providers.
	Select to switch between playing audio from the device and controlling music on a connected smartphone. When playing audio from the device, select to browse the available audio files and playlists in your library.
	Select to adjust the volume.
	Select to play and pause the current audio file.
	Select to skip to the next audio file in the playlist. Hold to fast forward through the current audio file.
	Select to restart the current audio file. Select twice to skip to the previous audio file in the playlist. Hold to rewind through the current audio file.
	Select to change the repeat mode.
	Select to change the shuffle mode.

## Connecting Headphones using Bluetooth Technology

To listen to music loaded onto your Forerunner 645 Music, you must connect headphones using Bluetooth technology.

- 1 Bring the headphones within 10 m (33 ft.) of your device.
- 2 Enable pairing mode on the headphones.
- 3 Hold **UP**.
- 4 Select **Settings > Sensors & Accessories > Add New > Headphones**.
- 5 Select your headphones to complete the pairing process.

## Garmin Pay

The Garmin Pay feature allows you to use your watch to pay for purchases in participating stores using credit or debit cards from a participating financial institution.

### Setting Up Your Garmin Pay Wallet

You can add one or more participating credit or debit cards to your Garmin Pay wallet. Go to [garmin.com/garminpay/banks](https://garmin.com/garminpay/banks) to find participating financial institutions.

- 1 From the Forerunner device page in the Garmin Connect Mobile app, select **Garmin Pay > Create Your Wallet**.
- 2 Follow the on-screen instructions.

### Paying for a Purchase Using Your Watch

Before you can use your watch to pay for purchases, you must set up at least one payment card.

You can use your watch to pay for purchases in a participating store.

- 1 Hold **LIGHT**.
- 2 Select
- 3 Enter your four-digit passcode.

**NOTE:** If you enter your passcode incorrectly three times, your wallet locks, and you must reset your passcode in the Garmin Connect Mobile app.

Your most recently used payment card appears.



- 4 If you have added multiple cards to your Garmin Pay wallet, select **DOWN** to change to another card (optional).
- 5 Within 60 seconds, hold your watch near the payment reader, with the watch facing the reader.  
The watch vibrates and displays a check mark when it is finished communicating with the reader.
- 6 If necessary, follow the instructions on the card reader to complete the transaction.

**TIP:** After you successfully enter your passcode, you can make payments without a passcode for 24 hours while you continue to wear your watch. If you remove the watch from your wrist or disable heart rate monitoring, you must enter the passcode again before making a payment.

### Adding a Card to Your Garmin Pay Wallet

You can add up to ten credit or debit cards to your Garmin Pay wallet.

- 1 From the Forerunner device page in the Garmin Connect Mobile app, select **Garmin Pay >** .
- 2 Follow the on-screen instructions to enter the card information and add the card to your wallet.

After the card is added, you can select the card on your watch when you make a payment.

### Managing Your Garmin Pay Wallet

You can view detailed information about each of your payment cards, and you can suspend, activate, or delete a card. You can also suspend or delete your whole Garmin Pay wallet.

**NOTE:** In some countries, participating financial institutions may restrict the wallet features.

- 1 From the Forerunner device page in the Garmin Connect Mobile app, select **Garmin Pay > Manage Your Wallet**.
- 2 Select an option:
  - To suspend a specific card, select the card, and select **Suspend**.  
The card must be active to make purchases using your Forerunner device.
  - To temporarily suspend all cards in your wallet, select **Suspend Wallet**.  
You cannot pay using your Forerunner device until you unsuspend at least one card using the app.
  - To unsuspend your suspended wallet, select **Unsuspend Wallet**.
  - To delete a specific card, select the card, and select **Delete**.  
The card is completely deleted from your wallet. If you want to add this card to your wallet in the future, you must enter the card information again.
  - To delete all cards in your wallet, select **Delete Wallet**.  
Your Garmin Pay wallet and all the card information associated with it are deleted. You cannot pay using your Forerunner device until you create a new wallet and add a card.

## Changing Your Garmin Pay Passcode

You must know your current passcode to change it. Your passcode cannot be recovered. If you forget your passcode, you must delete your wallet, create a new one, and reenter your card information.

You can change the passcode required to access your Garmin Pay wallet on your Forerunner device.

- 1 From the Forerunner device page in the Garmin Connect Mobile app, select **Garmin Pay > Reset Passcode**.
- 2 Follow the on-screen instructions.

The next time you pay using your Forerunner device, you must enter the new passcode.

## History

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

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

### Using History

History contains previous activities you have saved on your device.

- 1 Hold **UP**.
- 2 Select **History > Activities**.
- 3 Select an activity.
- 4 Select an option:
  - To view additional information about the activity, select **Details**.
  - To select a lap and view additional information about each lap, select **Laps**.
  - To select an interval and view additional information about each interval, select **Intervals**.
  - To view the activity on a map, select **Map**.
  - To view the impact of the activity on your aerobic and anaerobic fitness, select **Training Effect** (*About Training Effect*, page 12).
  - To view your time in each heart rate zone, select **Time in Zone** (*Viewing Your Time in Each Heart Rate Zone*, page 17).
  - To view an elevation plot of the activity, select **Elevation Plot**.
  - To delete the selected activity, select **Delete**.

### Viewing Your Time in Each Heart Rate Zone

Before you can view heart rate zone data, you must complete an activity with heart rate and save the activity.

Viewing your time in each heart rate zone can help you adjust your training intensity.

- 1 Hold **UP**.
- 2 Select **History > Activities**.
- 3 Select an activity.
- 4 Select **Time in Zone**.

### Viewing Data Totals

You can view the accumulated distance and time data saved to your device.

- 1 Hold **UP**.
- 2 Select **History > Totals**.
- 3 If necessary, select an activity.
- 4 Select an option to view weekly or monthly totals.

## Using the Odometer

The odometer automatically records the total distance traveled, elevation gained, and time in activities.

- 1 Hold **UP**.
- 2 Select **History > Totals > Odometer**.
- 3 Select **UP** or **DOWN** to view odometer totals.

### Deleting History

- 1 Hold **UP**.
- 2 Select **History > Options**.
- 3 Select an option:
  - Select **Delete All Activities** to delete all activities from the history.
  - Select **Reset Totals** to reset all distance and time totals.
- 4 Confirm your selection.

**NOTE:** This does not delete any saved activities.

## 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 the device.

- 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.

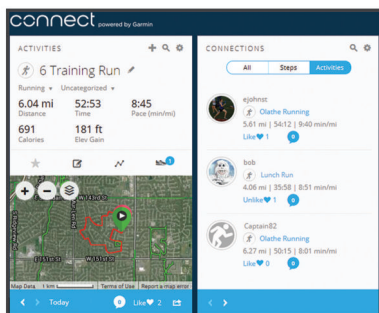
## Garmin Connect

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.



**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.

## Synchronizing Your Data with the Garmin Connect Mobile App

Your device periodically synchronizes data with the Garmin Connect Mobile app automatically. You can also manually synchronize your data at any time.

- 1 Bring the device within 3 m (10 ft.) of your smartphone.
- 2 From any screen, hold **LIGHT** to view the controls menu.
- 3 Select .
- 4 View your current data in the Garmin Connect Mobile app.

## Using Garmin Connect on Your Computer

The Garmin Express application connects your device to your Garmin Connect account using a computer. You can use the Garmin Express application to upload your activity data to your Garmin Connect account and to send data, such as workouts or training plans, from Garmin Connect website to your device. You can also install device software updates and manage your Connect IQ apps.

- 1 Connect the device to your computer using the USB cable.
- 2 Go to [www.garmin.com/express](http://www.garmin.com/express).
- 3 Download and install the Garmin Express application.
- 4 Open the Garmin Express application, and select **Add Device**.
- 5 Follow the on-screen instructions.

## 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.

## Creating and Following a Course on Your Device

- 1 From the watch face, select **START**.
- 2 Select an activity.
- 3 Hold **UP**, and select **Navigate > Courses > Create New**.
- 4 Enter a name for the course, and select .
- 5 Select **Add Location**.
- 6 Select an option.
- 7 If necessary, repeat steps 3 and 4.
- 8 Select **Done > Do Course**.  
Navigation information appears.
- 9 Select **START** to begin navigation.

## Saving Your Location

You can save your current location to navigate back to it later.

- 1 Hold **LIGHT**.
- 2 Select .  
**NOTE:** You may need to add this item to the controls menu (*Customizing the Controls Menu*, page 20).
- 3 Follow the on-screen instructions.

## Editing Your Saved Locations

You can delete a saved location or edit its name, elevation, and position information.

- 1 From the watch face, select **START > Navigate > Saved Locations**.
- 2 Select a saved location.
- 3 Select an option to edit the location.

## Deleting All Saved Locations

You can delete all of your saved locations at once.

From the watch face, select **START > Navigate > Saved Locations > Delete All**.

## Navigating to Your Starting Point During an Activity

You can navigate back to the starting point of your current activity in a straight line or along the path you traveled. This feature is available only for activities that use GPS.

- 1 During an activity, select **STOP > Back to Start**.
- 2 Select an option:
  - To navigate back to the starting point of your activity along the path you traveled, select **TracBack**.
  - To navigate back to the starting point of your activity in a straight line, select **Straight Line**.



Your current location ①, the track to follow ②, and your destination ③ appear on the map.

## Navigating to a Destination

You can use your device to navigate to a destination or follow a course.

- 1 From the watch face, select **START > Navigate**.



- 2 Select a category.
- 3 Respond to the on-screen prompts to choose a destination.
- 4 Select **Go To**.  
Navigation information appears.
- 5 Select **START** to begin navigation.

## Stopping Navigation

- 1 During an activity, hold **UP**.
- 2 Select **Stop Navigation**.

## Map

↖ represents your location on the map. Location names and symbols appear on the map. When you are navigating to a destination, your route is marked with a line on the map.

- Map navigation (*Panning and Zooming the Map*, page 19)
- Map settings (*Map Settings*, page 19)

### Panning and Zooming the Map

- 1 While navigating, select **UP** or **DOWN** to view the map.
- 2 Hold **UP**.
- 3 Select **Pan/Zoom**.
- 4 Select an option:
  - To toggle between panning up and down, panning left and right, or zooming, select **START**.
  - To pan or zoom the map, select **UP** and **DOWN**.
  - To quit, select **BACK**.

### Map Settings

You can customize how the map appears in the map app and data screens.

Hold **UP**, and select **Settings > Map**.

**Orientation:** Sets the orientation of the map. The North Up option shows north at the top of the screen. The Track Up option shows your current direction of travel at the top of the screen.

**User Locations:** Shows or hides saved locations on the map.

**Auto Zoom:** Automatically selects the zoom level for optimal use of your map. When disabled, you must zoom in or out manually.

## 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>.

### Pairing ANT+ Sensors

Pairing is the connecting of ANT+ wireless sensors, for example, connecting a heart rate monitor with your Garmin device. The first time you connect an ANT+ sensor to your device, you must pair the device and sensor. After the initial pairing, the device automatically connects to the sensor when you start your activity and the sensor is active and within range.

**NOTE:** If your device was packaged with an ANT+ sensor, they are already paired.

- 1 Install the sensor or put on the heart rate monitor.
- 2 Bring the device within 1 cm of the sensor, and wait while the device connects to the sensor.  
When the device detects the sensor, a message appears. You can customize a data field to display sensor data.
- 3 If necessary, select **Menu > Settings > Sensors and Accessories** to manage ANT+ sensors.

## 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.

### Going for a Run Using a Foot Pod

Before you go for a run, you must pair the foot pod with your Forerunner device (*Pairing ANT+ Sensors*, page 19).

You can run indoors using a foot pod to record pace, distance, and cadence. You can also run outdoors using a foot pod to record cadence data with your GPS pace and distance.

- 1 Install your foot pod according to the accessory instructions.
- 2 Select a running activity.
- 3 Go for a run.

### 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.

#### Improving Foot Pod Calibration

Before you can calibrate your device, you must acquire GPS signals and pair your device with the foot pod (*Pairing ANT+ Sensors*, page 19).

The foot pod is self-calibrating, but you can improve the accuracy of the speed and distance data with a few outdoor runs using GPS.

- 1 Stand outside for 5 minutes with a clear view of the sky.
- 2 Start a running activity.
- 3 Run on a track without stopping for 10 minutes.
- 4 Stop your activity, and save it.

Based on the recorded data, the foot pod calibration value changes, if necessary. You should not need to calibrate the foot pod again unless your running style changes.

### Calibrating Your Foot Pod Manually

Before you can calibrate your device, you must pair your device with the foot pod sensor (*Pairing ANT+ Sensors*, page 19).

Manual calibration is recommended if you know your calibration factor. If you have calibrated a foot pod with another Garmin product, you may know your calibration factor.

- 1 Hold **UP**.
- 2 Select **Settings > Sensors and Accessories**.
- 3 Select your foot pod.
- 4 Select **Cal. Factor > Set Value**.
- 5 Adjust the calibration factor:
  - Increase the calibration factor if your distance is too low.
  - Decrease the calibration factor if your distance is too high.

### Setting Foot Pod Speed and Distance

Before you can customize the foot pod speed and distance, you must pair your device with the foot pod sensor (*Pairing ANT+ Sensors*, page 19).

You can set your device to calculate speed and distance using your foot pod data instead of GPS data.

- 1 Hold **UP**.
- 2 Select **Settings > Sensors and Accessories**.
- 3 Select your foot pod.
- 4 Select **Speed** or **Distance**.



- 5 Select an option:
  - Select **Indoor** when you are training with GPS turned off, usually indoors.
  - Select **Always** to use your foot pod data regardless of the GPS setting.

## Using an Optional Bike Speed or Cadence Sensor

You can use a compatible bike speed or cadence sensor to send data to your device.

- Pair the sensor with your device (*Pairing ANT+ Sensors*, page 19).
- Set your wheel size (*Wheel Size and Circumference*, page 29).
- Go for a ride (*Starting an Activity*, page 2).

## 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 Using Garmin Express*, page 26).

## tempe

The tempe is an ANT+ wireless temperature sensor. You can attach the sensor to a secure strap or loop where it is exposed to ambient air, and therefore, provides a consistent source of accurate temperature data. You must pair the tempe with your device to display temperature data from the tempe.

# Customizing Your Device

## Customizing Your Activity List

- 1 Hold **UP**.
- 2 Select **Settings > Activities & Apps**.
- 3 Select an option:
  - Select an activity to customize the settings, set the activity as a favorite, change the order of appearance, and more.
  - Select **Add** to add more activities or create custom activities.

## Customizing the Widget Loop

You can change the order of widgets in the widget loop, remove widgets, and add new widgets.

- 1 Hold **UP**.
- 2 Select **Settings > Widgets**.
- 3 Select a widget.
- 4 Select an option:
  - Select **Reorder** to change the location of the widget in the widget loop.
  - Select **Remove** to remove the widget from the widget loop.
- 5 Select **Add Widgets**.
- 6 Select a widget.

The widget is added to the widget loop.

## Customizing the Controls Menu

You can add, remove, and change the order of the shortcut menu options in the controls menu (*Viewing the Controls Menu*, page 2).

- 1 From any screen, hold **LIGHT** to open the controls menu.
- 2 Hold **UP**.
- 3 Select an option:
  - Select **Add Controls** to add an additional shortcut to the controls menu.
  - Select **Reorder Controls** to change the location of a shortcut in the controls menu.
  - Select **Remove Controls** to remove a shortcut from the controls menu.

## Activity Settings

These settings allow you to customize each preloaded activity app based on your needs. For example, you can customize data pages and enable alerts and training features. Not all settings are available for all activity types.

Select **START**, select an activity, hold **UP**, and select the activity settings.

**Data Screens:** Enables you to customize data screens and add new data screens for the activity (*Customizing the Data Screens*, page 20).

**Alerts:** Sets the training or navigation alerts for the activity.

**Metronome:** Plays tones at a steady rhythm to help you improve your performance by training at a faster, slower, or more consistent cadence (*Using the Metronome*, page 6).

**Auto Lap:** Sets the options for the Auto Lap® feature (*Marking Laps by Distance*, page 21).

**Auto Pause:** Sets the device to stop recording data when you stop moving or when you drop below a specified speed (*Enabling Auto Pause*, page 21).

**Auto Scroll:** Enables you to move through all of the activity data screens automatically while the timer is running (*Using Auto Scroll*, page 22).

**Segment Alerts:** Enables prompts that alert you to approaching segments.

**GPS:** Sets the mode for the GPS antenna. Using GPS + GLONASS provides increased performance in challenging environments and faster position acquisition. Using the GPS + GLONASS option can reduce battery life more than using the GPS option only. Using the UltraTrac option records track points and sensor data less frequently (*UltraTrac*, page 22).

**Pool Size:** Sets the pool length for pool swimming.

**Countdown Start:** Enables a countdown timer for pool swimming intervals.

**Stroke Detect:** Enables stroke detection for pool swimming.

**Power Save Timeout:** Sets the power-save timeout setting for the activity (*Power Save Timeout Settings*, page 22).

**Background Color:** Sets the background color of each activity to black or white.

**Accent Color:** Sets the accent color of each activity to help identify which activity is active.

**Rename:** Sets the activity name.

**Reset:** Allows you to reset the activity settings.

## Customizing the Data Screens

You can show, hide, and change the layout and content of data screens for each activity.

- 1 Select **START**.
- 2 Select an activity.
- 3 Hold **UP**.
- 4 Select **Data Screens**.
- 5 Select a data screen to customize.

- 6 Select an option:
  - Select **Layout** to adjust the number of data fields on the data screen.
  - Select a field to change the data that appears in the field.
  - Select **Reorder** to change the location of the data screen in the loop.
  - Select **Remove** to remove the data screen from the loop.

- 7 If necessary, select **Add New** to add a data screen to the loop.

You can add a custom data screen, or select one of the predefined data screens.

## Adding a Map to an Activity

You can add the map to the data screens loop for an activity.

- 1 Hold **UP**.
- 2 Select **Settings > Activities & Apps**.
- 3 Select the activity to customize.
- 4 Select the activity settings.
- 5 Select **Data Screens > Add New > Map**.

## Alerts

You can set alerts for each activity, which can help you to train toward specific goals, to increase your awareness of your environment, and to navigate to your destination. Some alerts are available only for specific activities. There are three types of alerts: event alerts, range alerts, and recurring alerts.

**Event alert:** An event alert notifies you once. The event is a specific value. For example, you can set the device to alert you when you reach a specified elevation.

**Range alert:** A range alert notifies you each time the device is above or below a specified range of values. For example, you can set the device to alert you when your heart rate is below 60 beats per minute (bpm) and over 210 bpm.

**Recurring alert:** A recurring alert notifies you each time the device records a specified value or interval. For example, you can set the device to alert you every 30 minutes.

Alert Name	Alert Type	Description
Cadence	Range	You can set minimum and maximum cadence values.
Calories	Event, recurring	You can set the number of calories.
Custom	Recurring	You can select an existing message or create a custom message and select an alert type.
Distance	Recurring	You can set a distance interval.
Elevation	Range	You can set minimum and maximum elevation values.
Heart Rate	Range	You can set minimum and maximum heart rate values or select zone changes. See <a href="#">About Heart Rate Zones, page 6</a> and <a href="#">Heart Rate Zone Calculations, page 7</a> .
Pace	Range	You can set minimum and maximum pace values.
Proximity	Event	You can set a radius from a saved location.
Run/Walk	Recurring	You can set timed walking breaks at regular intervals.
Speed	Range	You can set minimum and maximum speed values.
Stroke Rate	Range	You can set high or low strokes per minute.
Time	Event, recurring	You can set a time interval.

## Setting an Alert

- 1 Hold **UP**.

- 2 Select **Settings > Activities & Apps**.

- 3 Select an activity.

**NOTE:** This feature is not available for all activities.

- 4 Select the activity settings.

- 5 Select **Alerts**.

- 6 Select an option:
  - Select **Add New** to add a new alert for the activity.
  - Select the alert name to edit an existing alert.

- 7 If necessary, select the type of alert.

- 8 Select a zone, enter the minimum and maximum values, or enter a custom value for the alert.

- 9 If necessary, turn on the alert.

For event and recurring alerts, a message appears each time you reach the alert value. For range alerts, a message appears each time you exceed or drop below the specified range (minimum and maximum values).

## Auto Lap

### Marking Laps by Distance

You can use Auto Lap to mark a lap at a specific distance automatically. This feature is helpful for comparing your performance over different parts of an activity (for example, every 1 mile or 5 kilometers).

- 1 Hold **UP**.

- 2 Select **Settings > Activities & Apps**.

- 3 Select an activity.

**NOTE:** This feature is not available for all activities.

- 4 Select the activity settings.

- 5 Select **Auto Lap**.

- 6 Select an option:
  - Select **Auto Lap** to turn Auto Lap on or off.
  - Select **Auto Distance** to adjust the distance between laps.

Each time you complete a lap, a message appears that displays the time for that lap. The device also beeps or vibrates if audible tones are turned on ([System Settings, page 22](#)).

If necessary, you can customize the data pages to display additional lap data ([Customizing the Data Screens, page 20](#)).

### Customizing the Lap Alert Message

You can customize one or two data fields that appear in the lap alert message.

- 1 Hold **UP**.

- 2 Select **Settings > Activities & Apps**.

- 3 Select an activity.

**NOTE:** This feature is not available for all activities.

- 4 Select the activity settings.

- 5 Select **Auto Lap > Lap Alert**.

- 6 Select a data field to change it.

- 7 Select **Preview** (optional).

### Enabling Auto Pause

You can use the Auto Pause feature to pause the timer automatically when you stop moving. This feature is helpful if your activity includes stop lights or other places where you must stop.

**NOTE:** History is not recorded while the timer is stopped or paused.

- 1 Hold **UP**.

- 2 Select **Settings > Activities & Apps**.

- 3 Select an activity.

**NOTE:** This feature is not available for all activities.

- 4 Select the activity settings.
- 5 Select **Auto Pause**.
- 6 Select an option:
  - To pause the timer automatically when you stop moving, select **When Stopped**.
  - To pause the timer automatically when your pace or speed drops below a specified level, select **Custom**.

### Using Auto Scroll

You can use the auto scroll feature to cycle through all of the activity data screens automatically while the timer is running.

- 1 Hold **UP**.
- 2 Select **Settings > Activities & Apps**.
- 3 Select an activity.

**NOTE:** This feature is not available for all activities.
- 4 Select the activity settings.
- 5 Select **Auto Scroll**.
- 6 Select a display speed.

### Changing the GPS Setting

By default, the device uses GPS to locate satellites. For increased performance in challenging environments and faster GPS position location, you can enable GPS + GLONASS. Using GPS + GLONASS reduces battery life more than using only GPS. Using the UltraTrac option records track points and sensor data less frequently ([UltraTrac, page 22](#)).

- 1 Hold **UP**.
- 2 Select **Settings > Activities & Apps**.
- 3 Select the activity to customize.
- 4 Select the activity settings.
- 5 Select **GPS**, and select an option.

#### UltraTrac

The UltraTrac feature is a GPS setting that records track points and sensor data less frequently. Enabling the UltraTrac feature increases battery life but decreases the quality of recorded activities. You should use the UltraTrac feature for activities that demand longer battery life and for which frequent sensor data updates are less important.

### Power Save Timeout Settings

The timeout settings affect how long your device stays in training mode, for example, when you are waiting for a race to start. Hold **UP**, select **Settings > Activities & Apps**, select an activity, and select the activity settings. Select **Power Save Timeout** to adjust the timeout settings for the activity.

**Normal:** Sets the device to enter low-power watch mode after 5 minutes of inactivity.

**Extended:** Sets the device to enter low-power watch mode after 25 minutes of inactivity. The extended mode can result in shorter battery life between charges.

## Removing an Activity or App

- 1 Hold **UP**.
- 2 Select **Settings > Activities & Apps**.
- 3 Select an activity.
- 4 Select an option:
  - To remove an activity from your list of favorites, select **Remove from Favorites**.
  - To delete the activity from the apps list, select **Remove**.

## Watch Face Settings

You can customize the appearance of the watch face by selecting the layout, colors, and additional data. You can also download custom watch faces from the Connect IQ store.

### Customizing the Watch Face

Before you can activate a Connect IQ watch face, you must install a watch face from the Connect IQ store ([Connect IQ Features, page 14](#)).

You can customize the watch face information and appearance, or activate an installed Connect IQ watch face.

- 1 From the watch face, hold **UP**.
- 2 Select **Watch Face**.
- 3 Select **UP** or **DOWN** to preview the watch face options.
- 4 Select **Add New** to scroll through additional pre-loaded watch faces.
- 5 Select **START > Apply** to activate a pre-loaded watch face or an installed Connect IQ watch face.
- 6 If using a pre-loaded watch face, select **START > Customize**.
- 7 Select an option:
  - To change the style of the numbers for the analog watch face, select **Dial**.
  - To change the style of the hands for the analog watch face, select **Hands**.
  - To change the style of the numbers for the digital watch face, select **Layout**.
  - To change the style of the seconds for the digital watch face, select **Seconds**.
  - To change the data that appears on the watch face, select **Data**.
  - To add or change an accent color for the watch face, select **Accent Color**.
  - To change the background color, select **Bkgd. Color**.
  - To save the changes, select **Done**.

## System Settings

Hold **UP**, and select **Settings > System**.

**Language:** Sets the language displayed on the device.

**Time:** Adjusts the time settings ([Time Settings, page 23](#)).

**Backlight:** Adjusts the backlight settings ([Changing the Backlight Settings, page 23](#)).

**Sounds:** Sets the device sounds, such as key tones, alerts, and vibrations.

**Do Not Disturb:** Turns on or off do not disturb mode. Use the Sleep Time option to turn on do not disturb mode automatically during your normal sleep hours. You can set your normal sleep hours on your Garmin Connect account.

**Auto Lock:** Allows you to lock the keys automatically to prevent accidental key presses. Use the During Activity option to lock the keys during a timed activity. Use the Not During Activity option to lock the keys when you are not recording a timed activity.

**Units:** Sets the units of measure used on the device ([Changing the Units of Measure, page 23](#)).

**Format:** Sets general format preferences, such as the pace and speed shown during activities, the start of the week, and geographical position format and datum options.

**Data Recording:** Sets how the device records activity data. The Smart recording option (default) allows for longer activity recordings. The Every Second recording option provides more detailed activity recordings, but may not record entire activities that last for longer periods of time.

**USB Mode:** Sets the device to use mass storage mode or Garmin mode when connected to a computer.

On a Forerunner 645 Music device, this sets the device to use Media Transfer Protocol (MTP) mode or Garmin mode when connected to a computer.

**Reset:** Allows you to reset user data and settings (*Resetting All Default Settings*, page 26).

**Software Update:** Allows you to install software updates downloaded using Garmin Express.

## Time Settings

Hold **UP**, and select **Settings > System > Time**.

**Time Format:** Sets the device to show time in a 12-hour or 24-hour format.

**Set Time:** Sets the time zone for the device. The Auto option sets the time zone automatically based on your GPS position.

**Time:** Allows you to adjust the time if it is set to the Manual option.

**Alerts:** Allows you to set sunrise and sunset alerts to sound a specific number of minutes or hours before the actual sunrise or sunset occurs.

**Sync With GPS:** Allows you to manually sync the time with GPS when you change time zones, and to update for daylight saving time.

## Changing the Backlight Settings

- 1 Hold **Menu**.
- 2 Select **Settings > System > Backlight**.
- 3 Select **During Activity** or **Not During Activity**.
- 4 Select an option:
  - Select **Keys and Alerts** to turn on the backlight for key presses and alerts.
  - Select **Gesture** to turn on the backlight by raising and turning your arm to look at your wrist.
  - Select **Timeout** to set the length of time before the backlight turns off.

## Changing the Units of Measure

You can customize units of measure for distance, pace and speed, elevation, weight, height, and temperature.

- 1 Hold **UP**.
- 2 Select **Settings > System > Units**.
- 3 Select a measurement type.
- 4 Select a unit of measure.

## Clock

### Setting the Time Manually

- 1 Hold **UP**.
- 2 Select **Settings > System > Time > Set Time > Manual**.
- 3 Select **Time**, and enter the time of day.

### Setting an Alarm

You can set up to ten separate alarms. You can set each alarm to sound once or to repeat regularly.

- 1 From the watch face, hold **UP**.
- 2 Select **Alarm Clock > Add Alarm**.
- 3 Select **Time**, and enter the alarm time.
- 4 Select **Repeat**, and select when the alarm should repeat (optional).
- 5 Select **Sounds**, and select a type of notification (optional).
- 6 Select **Backlight > On** to turn on the backlight with the alarm.
- 7 Select **Label**, and select a description for the alarm (optional).

## Deleting an Alarm

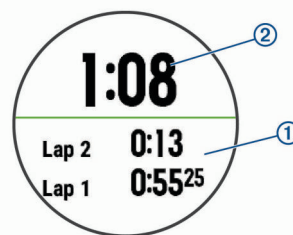
- 1 From the watch face, hold **UP**.
- 2 Select **Clock > Alarm Clock**.
- 3 Select an alarm.
- 4 Select **Delete**.

## Starting the Countdown Timer

- 1 From any screen, hold **LIGHT**.
- 2 Select **Timer**.  
**NOTE:** You may need to add this item to the controls menu (*Customizing the Controls Menu*, page 20).
- 3 Enter the time.
- 4 If necessary, select **Restart > On** to automatically restart the timer after it expires.
- 5 If necessary, select **Sounds**, and select a type of notification.
- 6 Select **Start Timer**.

## Using the Stopwatch

- 1 From any screen, hold **LIGHT**.
- 2 Select **Stopwatch**.  
**NOTE:** You may need to add this item to the controls menu (*Customizing the Controls Menu*, page 20).
- 3 Select **START** to start the timer.
- 4 Select **BACK** to restart the lap timer<sup>①</sup>.



The total stopwatch time <sup>②</sup> continues running.

- 5 Select **START** to stop both timers.
- 6 Select an option.
- 7 Save the recorded time as an activity in your history (optional).

## Syncing the Time with GPS

Each time you turn on the device and acquire satellites, the device automatically detects your time zones and the current time of day. You can also manually sync the time with GPS when you change time zones, and to update for daylight saving time.

- 1 From the watch face, hold **UP**.
- 2 Select **Settings > System > Time > Sync With GPS**.
- 3 Wait while the device locates satellites (*Acquiring Satellite Signals*, page 26).

## 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.

## Controlling a VIRB Action Camera

Before you can use the VIRB remote function, you must enable the remote setting on your VIRB camera. See the *VIRB Series Owner's Manual* for more information. You must also set the VIRB widget to be shown in the widget loop (*Customizing the Widget Loop*, page 20).

- 1 Turn on your VIRB camera.
- 2 On your Forerunner device, select **UP** or **DOWN** from the watch face to view the VIRB widget.



- 3 Wait while the device connects to your VIRB camera.
- 4 Select **START**.
- 5 Select an option:
  - To record video, select **Start Recording**.  
The video counter appears on the Forerunner screen.
  - To take a photo while recording video, select **DOWN**.
  - To stop recording video, select **STOP**.
  - To take a photo, select **Take Photo**.
  - To change video and photo settings, select **Settings**.

### Controlling a VIRB Action Camera During an Activity

Before you can use the VIRB remote function, you must enable the remote setting on your VIRB camera. See the *VIRB Series Owner's Manual* for more information. You must also set the VIRB widget to be shown in the widget loop ([Customizing the Widget Loop](#), page 20).

- 1 Turn on your VIRB camera.
- 2 On your Forerunner device, select **UP** or **DOWN** from the watch face to view the VIRB widget.
- 3 Wait while the device connects to your VIRB camera.  
When the camera is connected, a VIRB data screen is automatically added to the activity apps.
- 4 During an activity, select **UP** or **DOWN** to view the VIRB data screen.
- 5 Hold **UP**.
- 6 Select **VIRB**.
- 7 Select an option:
  - To control the camera using the activity timer, select **Settings > Timer Start/Stop**.  
**NOTE:** Video recording automatically starts and stops when you start and stop an activity.
  - To control the camera using the menu options, select **Settings > Manual**.
  - To manually record video, select **Start Recording**.  
The video counter appears on the Forerunner screen.
  - To take a photo while recording video, select **DOWN**.
  - To manually stop recording video, select **STOP**.
  - To take a photo, select **Take Photo**.

## Device Information

### Viewing Device Information

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

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

### Viewing E-label Regulatory and Compliance Information

The label for this device is provided electronically. The e-label may provide regulatory information, such as identification numbers provided by the FCC or regional compliance markings, as well as applicable product and licensing information.

- 1 Hold **UP**.
- 2 From the settings menu, select **About**.

## 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 connect the charging clip ① securely to the device.



- 2 Plug the USB cable into a USB charging port.
- 3 Charge the device completely.
- 4 Press ② to remove the charger.

### Tips for Charging the Device

- 1 Connect the charger securely to the device to charge it using the USB cable ([Charging the Device](#), page 24).  
You can charge the device by plugging the USB cable into a Garmin approved AC adapter with a standard wall outlet or a USB port on your computer. Charging a fully depleted battery takes up to two hours.
- 2 Remove the charger from the device after the battery charge level reaches 100%.

## Specifications

Battery type	Rechargeable, built-in lithium-ion battery
Forerunner 645 battery life, watch mode	Up to 7 days with activity tracking, smartphone notifications, and wrist-based heart rate
Forerunner 645 battery life, activity mode	Up to 14 hr. with GPS and wrist-based heart rate
Forerunner 645 Music battery life, watch mode	Up to 7 days with activity tracking, smartphone notifications, and wrist-based heart rate
Forerunner 645 Music battery life, watch mode with music	Up to 8 hr. with activity tracking, smartphone notifications, wrist-based heart rate, and music playback
Forerunner 645 Music battery life, activity mode	Up to 14 hr. with GPS and wrist-based heart rate
Forerunner 645 Music battery life, activity mode with music	Up to 5 hr. with GPS, wrist-based heart rate, and music playback
Water rating	Swim, 5 ATM*
Forerunner 645 Music media storage	3.5 GB (approximately 500 songs)
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)

Forerunner 645 radio frequency/protocol	2.4 GHz @ 9 dBm nominal <ul style="list-style-type: none"> <li>• ANT+ wireless communications protocol</li> <li>• Bluetooth 4.2 technology</li> <li>• Wi-Fi wireless technology</li> </ul> 13.56 MHz @ -40 dBm nominal, NFC wireless technology
Forerunner 645 Music radio frequency/protocol	2.4 GHz @ 8 dBm nominal <ul style="list-style-type: none"> <li>• ANT+ wireless communications protocol</li> <li>• Bluetooth 4.2 technology</li> <li>• Wi-Fi wireless technology</li> </ul> 13.56 MHz @ -40 dBm nominal, NFC 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).

## 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

### NOTICE

Even small amounts of sweat or moisture can cause corrosion of the electrical contacts when connected to a charger. Corrosion can prevent charging and data transfer.

- 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.

**TIP:** For more information, go to [www.garmin.com/fitandcare](http://www.garmin.com/fitandcare).

## Replacing the Bands

The device is compatible with 20 mm wide bands. Go to [buy.garmin.com](http://buy.garmin.com), or contact your Garmin dealer for information about optional accessories.

- 1 Slide the quick-release pin ① on the spring bar to remove the band.



- 2 Insert one side of the spring bar for the new band into the device.
- 3 Slide the quick-release pin, and align the spring bar with the opposite side of the device.
- 4 Repeat steps 1 through 3 to replace the other band.

## Troubleshooting

### Product Updates

On your computer, install Garmin Express ([www.garmin.com/express](http://www.garmin.com/express)). On your smartphone, install the Garmin Connect Mobile app.

This provides easy access to these services for Garmin devices:

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

### Setting Up Garmin Express

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

### Getting More Information

- Go to [support.garmin.com](http://support.garmin.com) 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 [buy.garmin.com](http://buy.garmin.com), or contact your Garmin dealer for information about optional accessories and replacement parts.

### Activity Tracking

For more information about activity tracking accuracy, go to [garmin.com/ataccuracy](http://garmin.com/ataccuracy).

#### 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 step count does not seem accurate

If your step count does not seem accurate, you can try these tips.

- Wear the device on your non-dominant wrist.
- Carry the device in your pocket when pushing a stroller or lawn mower.
- Carry the device in your pocket when actively using your hands or arms only.

**NOTE:** The device may interpret some repetitive motions, such as washing dishes, folding laundry, or clapping your hands, as steps.

#### The step counts on my device and my Garmin Connect account don't match

The step count on your Garmin Connect account updates when you synchronize your device.

- 1 Select an option:
  - Synchronize your step count with the Garmin Connect application ( ([Using Garmin Connect on Your Computer](#), page 18)).
  - Synchronize your step count with the Garmin Connect Mobile app ( ([Manually Syncing Data with Garmin Connect Mobile](#), page 13)).
- 2 Wait while the device synchronizes your data.

Synchronizing can take several minutes.

**NOTE:** Refreshing the Garmin Connect Mobile app or the Garmin Connect application does not synchronize your data or update your step count.

### The floors climbed amount does not seem accurate

Your device uses an internal barometer to measure elevation changes as you climb floors. A floor climbed is equal to 3 m (10 ft.).

- Avoid holding handrails or skipping steps while climbing stairs.
- In windy environments, cover the device with your sleeve or jacket as strong gusts can cause erratic readings.

### My intensity minutes are flashing

When you exercise at an intensity level that qualifies toward your intensity minutes goal, the intensity minutes flash.

Exercise for at least 10 consecutive minutes at a moderate or vigorous intensity level.

## 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.

## Restarting the Device

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

**NOTE:** Restarting 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.

## Resetting All Default Settings

**NOTE:** This deletes all user-entered information and activity history. If you have set up a Garmin Pay wallet, restoring default settings also deletes the wallet from your device.

You can reset all of the device settings to the factory default values.

- 1 Hold **UP**.
- 2 Select **Settings > System > Reset**.
- 3 Select an option:
  - To reset all of the device settings to the factory default values and delete all activity information and stored music, select **Delete Data and Reset Settings**.

- To reset all of the device settings to the factory default values and save all activity information and stored music, select **Reset Default Settings**.

## Updating the Software Using Garmin Express

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 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 device is in the wrong language

You can change the device language selection if you have accidentally selected the wrong language on the device.

- 1 Hold **UP**.
- 2 Scroll down to the last item in the list, and select **START**.
- 3 Scroll down to the second to last item in the list, and select **START**.
- 4 Select **START**.
- 5 Select your language.

## Is my smartphone compatible with my device?

The Forerunner device is compatible with smartphones using Bluetooth Smart wireless technology.

Go to [www.garmin.com/ble](http://www.garmin.com/ble) for compatibility information.

## Tips for Existing Garmin Connect Users

- 1 From the Garmin Connect Mobile app, select  or .
- 2 Select **Garmin Devices > Add Device**.

## My phone will not connect to the device

- Enable Bluetooth wireless technology on your smartphone.
- Bring your phone within 10 m (33 ft.) of the device.
- On your smartphone, open the Garmin Connect Mobile app, select  or , and select **Garmin Devices > Add Device** to enter pairing mode.
- On your device, hold **LIGHT**, and select  to turn on Bluetooth technology and enter pairing mode.

## Maximizing the Battery Life

You can do several things to extend the life of the battery.

- Reduce the backlight timeout ([Changing the Backlight Settings](#), page 23).
- Use UltraTrac GPS mode for your activity ([UltraTrac](#), page 22).
- Turn off Bluetooth wireless technology when you are not using connected features ([Bluetooth Connected Features](#), page 13).
- When pausing your activity for a longer period of time, use the resume later option ([Stopping an Activity](#), page 2).
- Turn off activity tracking ([Activity Tracking Settings](#), page 8).

- Use a Connect IQ watch face that is not updated every second.  
For example, use a watch face without a second hand ([Customizing the Watch Face](#), page 22).
- Limit the smartphone notifications the device displays ([Managing Notifications](#), page 1).
- Stop broadcasting heart rate data to paired Garmin devices ([Broadcasting Heart Rate Data to Garmin® Devices](#), page 9).
- Turn off wrist-based heart rate monitoring ([Turning Off the Wrist Heart Rate Monitor](#), page 9).

**NOTE:** Wrist-based heart rate monitoring is used to calculate vigorous intensity minutes and calories burned.

## The temperature reading is not accurate

Your body temperature affects the temperature reading for the internal temperature sensor. To get the most accurate temperature reading, you should remove the watch from your wrist and wait 20 to 30 minutes.

You can also use an optional external temperature sensor to view accurate ambient temperature readings while wearing the watch.

## How can I manually pair ANT+ sensors?

You can use the device settings to manually pair ANT+ sensors. The first time you connect a sensor to your device using ANT+ wireless technology, you must pair the device and sensor. After they are paired, the device connects to the sensor automatically when you start an activity and the sensor is active and within range.

- 1 Stay 10 m (33 ft.) away from other ANT+ sensors while pairing.
- 2 If you are pairing a heart rate monitor, put on the heart rate monitor.  
The heart rate monitor does not send or receive data until you put it on.
- 3 Hold **UP**.
- 4 Select **Settings > Sensors and Accessories > Add New**.
- 5 Select an option:
  - Select **Search All**.
  - Select your sensor type.

After the sensor is paired with your device, a message appears. Sensor data appears in the data page loop or a custom data field.

## Can I use my Bluetooth sensor with my watch?

The device is compatible with some Bluetooth sensors. The first time you connect a sensor to your Garmin device, you must pair the device and sensor. After they are paired, the device connects to the sensor automatically when you start an activity and the sensor is active and within range.

- 1 Hold **UP**.
- 2 Select **Settings > Sensors and Accessories > Add New**.
- 3 Select an option:
  - Select **Search All**.
  - Select your sensor type.

You can customize the optional data fields ([Customizing the Data Screens](#), page 20).

## My music cuts out or my headphones do not stay connected

When using a Forerunner 645 Music device connected to headphones using Bluetooth technology, the signal is strongest

when there is a direct line of sight between the device and the antenna on the headphones.

- If the signal passes through your body, you may experience signal loss or your headphones may become disconnected.
- It is recommended to wear your headphones with the antenna on the same side of your body as your Forerunner 645 Music device.

# Appendix

## Data Fields

Some data fields require ANT+ accessories to display data.

**%HRR:** The percentage of heart rate reserve (maximum heart rate minus resting heart rate).

**24-Hour Max.:** The maximum temperature recorded in the last 24 hours.

**24-Hour Min.:** The minimum temperature recorded in the last 24 hours.

**Aerobic TE:** The impact of the current activity on your aerobic fitness level.

**Anaerobic TE:** The impact of the current activity on your anaerobic fitness level.

**Average HR:** The average heart rate for the current activity.

**Average Pace:** The average pace for the current activity.

**Average Swolf:** The average swolf score for the current activity. Your swolf score is the sum of the time for one length plus the number of strokes for that length ([Swim Terminology](#), page 3). In open water swimming, 25 meters is used to calculate your swolf score.

**Avg. %HRR:** The average percentage of heart rate reserve (maximum heart rate minus resting heart rate) for the current activity.

**Avg. Ascent:** The average vertical distance of ascent since the last reset.

**Avg. Cadence:** Running. The average cadence for the current activity.

**Avg. Cadence:** Cycling. The average cadence for the current activity.

**Avg. Descent:** The average vertical distance of descent since the last reset.

**Avg. GCT Bal.:** The average ground contact time balance for the current session.

**Avg. Lap Time:** The average lap time for the current activity.

**Avg. Speed:** The average speed for the current activity.

**Avg. Stride Len.:** The average stride length for the current session.

**Avg. Strk/Len:** The average number of strokes per pool length during the current activity.

**Avg. Vert. Osc.:** The average amount of vertical oscillation for the current activity.

**Avg. Vert. Ratio:** The average ratio of vertical oscillation to stride length for the current session.

**Avg GCT:** The average amount of ground contact time for the current activity.

**Avg HR %Max.:** The average percentage of maximum heart rate for the current activity.

**Battery Level:** The remaining battery power.

**Bearing:** The direction from your current location to a destination. You must be navigating for this data to appear.

**Cadence:** Running. The steps per minute (right and left).



**Cadence:** Cycling. The number of revolutions of the crank arm. Your device must be connected to a cadence accessory for this data to appear.

**Calories:** The amount of total calories burned.

**Compass Hdg.:** The direction you are moving based on the compass.

**Course:** The direction from your starting location to a destination. Course can be viewed as a planned or set route. You must be navigating for this data to appear.

**Dest. Location:** The position of your final destination.

**Dest. Wpt:** The last point on the route to the destination. You must be navigating for this data to appear.

**Dist. Remaining:** The remaining distance to the final destination. You must be navigating for this data to appear.

**Distance:** The distance traveled for the current track or activity.

**Distance To Next:** The remaining distance to the next waypoint on the route. You must be navigating for this data to appear.

**Elapsed Time:** The total time recorded. For example, if you start the timer and run for 10 minutes, then stop the timer for 5 minutes, then start the timer and run for 20 minutes, your elapsed time is 35 minutes.

**Elevation:** The altitude of your current location above or below sea level.

**Estimated Total Distance:** The estimated distance from the start to the final destination. You must be navigating for this data to appear.

**ETA:** The estimated time of day when you will reach the final destination (adjusted to the local time of the destination). You must be navigating for this data to appear.

**ETA at Next:** The estimated time of day when you will reach the next waypoint on the route (adjusted to the local time of the waypoint). You must be navigating for this data to appear.

**ETE:** The estimated time remaining until you reach the final destination. You must be navigating for this data to appear.

**GCT:** The amount of time in each step that you spend on the ground while running, measured in milliseconds. Ground contact time is not calculated while walking.

**GCT Balance:** The left/right balance of ground contact time while running.

**Glide Ratio:** The ratio of horizontal distance traveled to the change in vertical distance.

**Glide Ratio Dest.:** The glide ratio required to descend from your current position to the destination elevation. You must be navigating for this data to appear.

**GPS:** The strength of the GPS satellite signal.

**GPS Elevation:** The altitude of your current location using GPS.

**GPS Heading:** The direction you are moving based on GPS.

**Grade:** The calculation of rise (elevation) over run (distance). For example, if for every 3 m (10 ft.) you climb you travel 60 m (200 ft.), the grade is 5%.

**Heading:** The direction you are moving.

**Heart Rate:** Your heart rate in beats per minute (bpm). Your device must be connected to a compatible heart rate monitor.

**HR %Max.:** The percentage of maximum heart rate.

**HR Zone:** The current range of your heart rate (1 to 5). The default zones are based on your user profile and maximum heart rate (220 minus your age).

**Int. Distance:** The distance traveled for the current interval.

**Int. Pace:** The average pace for the current interval.

**Int. Swolf:** The average swolf score for the current interval.

**Interval Lengths:** The number of pool lengths completed during the current interval.

**Interval Time:** The stopwatch time for the current interval.

**Int Strk/Len:** The average number of strokes per pool length during the current interval.

**Int Strk Rate:** The average number of strokes per minute (spm) during the current interval.

**Int Strk Type:** The current stroke type for the interval.

**L. Lap HR %Max.:** The average percentage of maximum heart rate for the last completed lap.

**L. Len. Stk. Rate:** The average number strokes per minute (spm) during the last completed pool length.

**L. Len. Stk. Type:** The stroke type used during the last completed pool length.

**L. Len. Strokes:** The total number of strokes for the last completed pool length.

**Lap %HRR:** The average percentage of heart rate reserve (maximum heart rate minus resting heart rate) for the current lap.

**Lap Ascent:** The vertical distance of ascent for the current lap.

**Lap Cadence:** Running. The average cadence for the current lap.

**Lap Cadence:** Cycling. The average cadence for the current lap.

**Lap Descent:** The vertical distance of descent for the current lap.

**Lap Distance:** The distance traveled for the current lap.

**Lap GCT:** The average amount of ground contact time for the current lap.

**Lap GCT Bal.:** The average ground contact time balance for the current lap.

**Lap HR:** The average heart rate for the current lap.

**Lap HR %Max.:** The average percentage of maximum heart rate for the current lap.

**Lap Pace:** The average pace for the current lap.

**Laps:** The number of laps completed for the current activity.

**Lap Speed:** The average speed for the current lap.

**Lap Stride Len.:** The average stride length for the current lap.

**Lap Time:** The stopwatch time for the current lap.

**Lap Vert. Osc.:** The average amount of vertical oscillation for the current lap.

**Lap Vert. Ratio:** The average ratio of vertical oscillation to stride length for the current lap.

**Last Lap %HRR:** The average percentage of heart rate reserve (maximum heart rate minus resting heart rate) for the last completed lap.

**Last Lap Ascent:** The vertical distance of ascent for the last completed lap.

**Last Lap Cad.:** Running. The average cadence for the last completed lap.

**Last Lap Cad.:** Cycling. The average cadence for the last completed lap.

**Last Lap Descent:** The vertical distance of descent for the last completed lap.

**Last Lap Dist.:** The distance traveled for the last completed lap. The average heart rate for the last completed lap.

**Last Lap Pace:** The average pace for the last completed lap.

**Last Lap Speed:** The average speed for the last completed lap.

**Last Lap Time:** The stopwatch time for the last completed lap.

**Last Len. Pace:** The average pace for your last completed pool length.

**Last Len. Swolf:** The swolf score for the last completed pool length.

**Lat/Lon:** The current position in latitude and longitude regardless of the selected position format setting.

**Lengths:** The number of pool lengths completed during the current activity.

**Location:** The current position using the selected position format setting.

**Max. Ascent:** The maximum rate of ascent in feet per minute or meters per minute since the last reset.

**Max. Descent:** The maximum rate of descent in meters per minute or feet per minute since the last reset.

**Max. Elevation:** The highest elevation reached since the last reset.

**Maximum Speed:** The top speed for the current activity.

**Min. Elevation:** The lowest elevation reached since the last reset.

**Muscle O2 Sat. %:** The estimated muscle oxygen saturation percentage for the current activity.

**Next Waypoint:** The next point on the route. You must be navigating for this data to appear.

**Off Course:** The distance to the left or right by which you have strayed from the original path of travel. You must be navigating for this data to appear.

**Pace:** The current pace.

**Perform. Cond.:** The performance condition score is a real-time assessment of your ability to perform.

**Repeat On:** The timer for the last interval plus the current rest (pool swimming).

**Rest Timer:** The timer for the current rest (pool swimming).

**Speed:** The current rate of travel.

**Stride Length:** The length of your stride from one footfall to the next, measured in meters.

**Sunrise:** The time of sunrise based on your GPS position.

**Sunset:** The time of sunset based on your GPS position.

**Temperature:** The temperature of the air. Your body temperature affects the temperature sensor.

**Time in Zone:** The time elapsed in each heart rate or power zone.

**Time of Day:** The time of day based on your current location and time settings (format, time zone, daylight saving time).

**Timer:** The stopwatch time for the current activity.

**Time to Next:** The estimated time remaining before you reach the next waypoint in the route. You must be navigating for this data to appear.

**Total Ascent:** The total elevation distance ascended since the last reset.

**Total Descent:** The total elevation distance descended since the last reset.

**Total Hemoglobin:** The estimated muscle oxygen total for the current activity.

**V Dist to Dest:** The elevation distance between your current position and the final destination. You must be navigating for this data to appear.

**Vert. Spd.:** The rate of ascent or descent over time.

**Vertical Osc.:** The amount of bounce while you are running. The vertical motion of your torso, measured in centimeters for each step.

**Vertical Ratio:** The ratio of vertical oscillation to stride length.

**Vert Spd to Tgt:** The rate of ascent or descent to a predetermined altitude. You must be navigating for this data to appear.

**VMG:** The speed at which you are closing on a destination along a route. You must be navigating for this data to appear.

## VO2 Max. Standard Ratings

These tables include standardized classifications for VO2 max. estimates by age and gender.

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	39.2	35.5	32.3
Fair	40	41.7	40.5	38.5	35.6	32.3	29.4
Poor	0–40	<41.7	<40.5	<38.5	<35.6	<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	41.1	37.8	36.7
Excellent	80	43.9	42.4	39.7	36.7	33	30.9
Good	60	39.5	37.8	36.3	33	30	28.1
Fair	40	36.1	34.4	33	30.1	27.5	25.9
Poor	0–40	<36.1	<34.4	<33	<30.1	<27.5	<25.9

Data reprinted with permission from The Cooper Institute. For more information, go to [www.CooperInstitute.org](http://www.CooperInstitute.org).

## Wheel Size and Circumference

The wheel size is marked on both sides of the tire. This is not a comprehensive list. You can also use one of the calculators available on the Internet.





Wheel Size	L (mm)
12 × 1.75	935
14 × 1.5	1020
14 × 1.75	1055
16 × 1.5	1185
16 × 1.75	1195
18 × 1.5	1340

Wheel Size	L (mm)
18 × 1.75	1350
20 × 1.75	1515
20 × 1-3/8	1615
22 × 1-3/8	1770
22 × 1-1/2	1785
24 × 1	1753
24 × 3/4 Tubular	1785
24 × 1-1/8	1795
24 × 1-1/4	1905
24 × 1.75	1890

Wheel Size	L (mm)
24 × 2.00	1925
24 × 2.125	1965
26 × 7/8	1920
26 × 1(59)	1913
26 × 1(65)	1952
26 × 1.25	1953
26 × 1-1/8	1970
26 × 1-3/8	2068
26 × 1-1/2	2100
26 × 1.40	2005
26 × 1.50	2010
26 × 1.75	2023
26 × 1.95	2050
26 × 2.00	2055
26 × 2.10	2068
26 × 2.125	2070
26 × 2.35	2083
26 × 3.00	2170
27 × 1	2145
27 × 1-1/8	2155
27 × 1-1/4	2161
27 × 1-3/8	2169
650 × 35A	2090
650 × 38A	2125
650 × 38B	2105
700 × 18C	2070
700 × 19C	2080
700 × 20C	2086
700 × 23C	2096
700 × 25C	2105
700 × 28C	2136
700 × 30C	2170
700 × 32C	2155
700C Tubular	2130
700 × 35C	2168
700 × 38C	2180
700 × 40C	2200

## Symbol Definitions

These symbols may appear on the device or accessory labels.

	Alternating current. The device is suitable for alternating current.
	Direct current. The device is suitable for direct current only.
	Fuse. Indicates a fuse specification or location.
	WEEE disposal and recycling symbol. The WEEE symbol is attached to the product in compliance with the EU directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE). It is intended to deter the improper disposal of this product and to promote reuse and recycling.

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