

## Benefits of Heart Rate Monitoring

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Why is it important to monitor your heart rate when you exercise?

- ✖ Your heart rate is a convenient, reliable, personal indicator of the intensity of your exercise.
- ✖ It's good to know the intensity of your exercise so you can vary it depending on your fitness level and the goals you want to achieve by exercising.

Heart rate monitoring brings following benefits to all levels of users:

### Exercise Beginner

- ✖ Teaches you about your body's reaction to exercise
- ✖ Keeps you from starting out too hard (as beginners are often tempted)
- ✖ Helps you control the intensity of your exercise routine
- ✖ Provides feedback on your improvement

### Regular exerciser

- ✖ Helps you control the intensity of your exercise program under different circumstances
- ✖ Helps you fine-tune your program for the best results
- ✖ Gives you plenty of feedback both during and after a session, teaching you more about your body's reaction to exercise
- ✖ Helps you see how you're progressing

### Serious exerciser

- ✖ Helps you make sure you work out at the right planned intensities for your training program (hard enough on hard days, light enough on recovery days, enough recovery between intervals, etc.)
- ✖ Enables you to track and accurately adjust your training program
- ✖ Teaches you about your body's reaction to training, providing an early warning of overtraining, flu, etc.
- ✖ Provides feedback on your progress

## How to Determine Your Maximum Heart Rate

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The most accurate way of determining individual maximum heart rate (HRmax) is to have it clinically measured, usually on a maximal treadmill or by taking a bicycle stress test supervised by a cardiologist or exercise physiologist. HRmax can also be estimated by using the commonly used formula: 220 minus age. Research has shown that the formula is not very accurate, especially for people who have been fit for many years or for older people. The HRmax-p score, however, predicts individual maximum heart rate value more accurately. This feature is included in most Polar running computers.

If you have done some hard training in recent weeks and know that you can safely reach maximum heart rate, here is a simple test you can take.

**You should consult your physician before undertaking this test.** We also recommend you take the test together with a training partner.

**Step 1:** Warm up for 15 minutes on a flat surface, building to your usual training pace.

**Step 2:** Then choose a hill or stairwell that will take you more than 2 minutes to climb. Run up the hill/steps once, building to as hard a pace that you can hold for 20 min. Return to the base of the hill/steps.

**Step 3:** Run up the hill/steps again, building towards a pace you can just about hold for 3 km. Note your highest heart rate. Your maximum is approximately 10 beats higher than the noted value.

**Step 4:** Run back down the hill allowing your heart rate to drop 30 to 40 beats.

**Step 5:** Run up the hills/steps once again at a pace that you can only hold for 1 minute. Try to run half-way up the hills/steps. Note your highest heart rate. This brings you close to your maximum heart rate. Use this value as your maximum heart rate to set training zones.

**Step 6:** Make sure you get a good cool-down of a minimum of 10 minutes.

## Different Training Heart rates are used for Different Purposes

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Training heart rates are ranges of percentages of your maximum heart rate ( $HR_{max}$ ).

Each range is useful for different purposes and is associated with different fitness benefits.

**Training heart rate 50-60%  $HR_{max}$** - Great for recovery sessions.

**Training heart rate 60-70%  $HR_{max}$** - Improves the heart's ability to pump blood- Increases the number of small blood vessels in your muscles- Increases the enzymes in your muscles responsible for oxygen metabolism- Increases the strength of your muscles, tendons, ligaments and bones- Improves your endurance- Burns fat as the body's main energy source at this intensity

**Training heart rate 70-80%  $HR_{max}$** - Also called the "steady state" because it's the fastest pace you can maintain for long periods of time (for example, a competitive Ironman athlete will race near this intensity)- Accustoms the body with a faster pace- Improves endurance- Begins to raise the speed you can maintain without building up lactic acid (your anaerobic threshold)- The more fit you are, the greater the percentage of fat your body uses as fuel, enabling you to perform longer at this rate while preserving limited stores of glycogen

**Training heart rate 80-90%  $HR_{max}$** - At this intensity, you begin to "go anaerobic" and build up lactic acid (reach your anaerobic threshold)- Your anaerobic threshold increases along with your fitness- This intensity can be maintained for about one hour in competition

**Training heart rate 90-100%  $HR_{max}$** - Is only needed for sprint training - racing over short distances (track sprinters, short-distance swimmers).

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# A Healthy Heart Through Training

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**The cardiovascular system serves several important functions in the body.**

For example, it delivers oxygen and nutrients to and removes carbon dioxide and metabolic waste products from every cell in the body. Your body's cardiovascular system has three components:

- \* The heart (cardiac muscle)
- \* The blood vessels
- \* The blood

The heart is the pump that moves blood from the lungs (where the blood picks up oxygen) to the muscles (which burn the oxygen as fuel) and back to the lungs again. The harder you are training, the more fuel your muscles need and the harder your heart has to work to pump oxygen-rich blood to the muscles.

As you get more fit, your heart is able to pump more blood with every beat. As a result, your heart doesn't have to beat as often to get the needed oxygen to your muscles - so both your resting heart rate and your exercise heart rate (at any given exertion level) decrease.

**Heart rate is one of the simplest and most informative of the cardiovascular parameters.** When you start training, your heart rate increases rapidly in proportion to the intensity of the training. In Polar Heart Rate Monitors the transmitter in the belt detects the electrocardiogram (ECG), the electric signal originating from your heart. The transmitter then sends an electromagnetic signal to the Polar wrist receiver, which shows you information about your heart rate.

## Why Use a Heart Rate Monitor

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Maximize the benefits of your training and follow your improvement.

There are a wide variety of reasons for using a heart rate monitor in your training program:

**Put to good use the simple observation that the harder you exercise, the faster your heart beats.** Your monitor acts as your rev counter to give you a precise measurement of your exercise intensity.

**Individualize your program.** You can train at your own ideal pace. Target heart rate settings are standard features in all Polar S-series Heart Rate Monitors.

**Monitor and measure your progress.** Polar S-series Heart Rate Monitors (except Polar S120 and Polar S150) provide an easy and reliable fitness test, which you do at rest to get an estimate of your VO<sub>2</sub>max (OwnIndex™).

**Witness your own improvement to get more motivated.**

**Maximize the benefits of exercise.**

**Introduce some objective observation into your workout.** Are you on the right track? Are you improving?

**Calculate your body's use of energy** (OwnCal™) during training and racing with Polar S-series Heart Rate Monitors (except Polar S120 and Polar S150), which help you to plan your diet to forestall fatigue caused by energy shortage.

**Train and rest in the right balance.** Polar OwnOptimizer test tells you whether you have recovered enough for your next training session.

Use the Polar S625X Running Computer to combine running speed and distance measurement with heart rate. This ultimate training tool features also altitude and ascent for route profile, Polar OwnOptimizer recovery test, mobile connectivity and support for triathlon and cross training usage.

Use the Polar Cycling Heart Rate Monitors to combine heart rate with speed, distance, altitude, ascent, cadence and power output.