Abnormal Heart Rate Readings During Exercise

There can be several reasons for abnormal or irregular readings during exercise. Due to the same reasons, heart rate may stay at the same value for a long time or the heart rate stays at zero (0).

1. Poor contact between the skin and the electrodes of the transmitter

For accurate heart rate measurement, the contact between skin and the electrodes should be as good as possible. Polar transmitters measure the EKG signal from the chest, where it is the strongest. The weak heart-generated signals need to be accurately measured before the calculation of the heart rate. It is therefore important to ensure good contact between the skin and the electrodes. Here are some tips:

1.1. Moisten the grooved electrode areas on the back of the transmitter. At the beginning of the exercise session your skin may be dry and the moisture will help ensure better contact. When you start to sweat the contact will improve. Saliva is also a good conductor.

1.2. Tighten the elastic strap of the transmitter. If the transmitter is loose, the movement of the electrodes disturbs the detection of the EKG signal. If the standard strap does not fit satisfactorily, larger and smaller elastic straps are available as accessories.

1.3. The type of the EKG signal slightly varies from person to person. The form of the EKG signal can depend on the form of the chest, the anatomical location and position of the heart, position of the electrodes and the amount of body fat. If the EKG signal is weak, disturbances can more easily interfere with the transmission signal. Repositioning the transmitter may improve the transmission. Find the best position by turning the transmitter left or right, or place it lower or higher. There have been cases where the transmitter detects the heart rate better when it is positioned on the back, however, the belt must then be worn with the Polar logo upside down and facing out. This ensures that the left electrode stays on the left side of the body and the right electrode stays on the right side of the body. Make sure to wet the electrodes every time it is moved to a new position.

1.4. For active sports like aerobics or marathons, women can use the accessory Heart Bra that makes the transmitter stay in place better. The Polar Heart Bra is available at Polar retailers or can be purchased through the Polar on-line store.

1.5. Hairy chest may also weaken the contact. Try to find the best possible position for the transmitter.

1.6 Dirty electrodes can cause poor contact. Transmitter should be cleaned regularly (see section below on proper care and maintenance).
1.7. Use of a conductive electrode lotion or gel may improve the contact. It is very important that the lotion or gel be applied to the electrode area only (avoid the center area of the transmitter). Follow proper care and cleaning guidelines below after use.

2. Wear and tear of the transmitter

Proper care of the transmitter after use ensures longer service life for the transmitter.

2.1. Wash the transmitter regularly after use with a mild soap and water solution. Dry it carefully with a soft towel after washing. Never use alcohol or any abrasive such as steel wool or cleaning chemicals on any part of the heart rate monitor. Do not store the transmitter when it is wet. Sweat and moisture can keep the electrodes wet and the transmitter activated, which shortens the battery life.

2.2. Store your Polar heart rate monitor in a cool and dry place. Make sure that the electrodes do not contact anything damp, such as sport towel or wet elastic strap. Do not store a wet transmitter in any kind of non-breathing material, such as a plastic bag or a sports bag.

2.3. Do not bend or stretch the transmitter. This may damage the electrodes.

2.4. Only dry the transmitter with a towel. Hard-handed handling may damage the electrodes.

2.5. Keep your Polar heart rate monitor out of extreme cold and heat. The operating temperature is -10 ºC to 50 ºC/ 14 ºF to 122 ºF. Do not expose the Polar heart rate monitor to direct sunlight for extended periods, such as leaving it in a car.

2.6. The transmitter can be washed with mild soap and a gentle brush. If the electrodes appear discolored, the transmitter needs to be washed. Do not use any alcohol or a solvent based detergent.

3. Electromagnetic disturbances

Erratic readings on the receiver can be caused by electromagnetic disturbances. If the heart rate readings appear to be abnormal, check that your Polar HRM is not within range of other strong electromagnetic signals. Common sources are televisions, computers, cars, cellphones, TV antennas, high voltage power lines (both above and below ground) and some exercise equipment. Re-locating the position of the wrist receiver can usually solve this problem.

To find a location that has no interference, remove the chest transmitter and exercise as usual. If the heart symbol continues to flash, you are picking up interference. In this case, move the wrist receiver to a location where it does not flash, then replace your chest
transmitter. In most cases when the interference is caused by a piece of exercise equipment, placing the wrist receiver on the side rail, away from the front electronics display of the equipment will correct the problem.

Please note: Static electricity in clothing or a flapping shirt can cause electrical interference, so some items of clothing, i.e. man-made fibers, can also be the cause. Please try wetting the t-shirt in the area where the transmitter is.

4. The distance between the transmitter and the receiver

The maximum transmission range between the transmitter and the receiver is 3 feet. If the distance is greater, the receiver may not get all the signals sent from the transmitter. In cases where the transmission range is at its extremes, for example rowing or biking where the receiver is not attached to the wrist, the receiver may display the same heart rate for a long time. To avoid this, keep the distance within 3 feet.

5. Signals from more than one Polar transmitter in a 3-ft transmission range

Note: only with non-coded transmitter!

In cases where there are more than one transmitter nearer than 3 feet, and you are using the non-coded transmitter, your receiver can pick up the signal from all transmitters within the range, this can result in abnormally high readings. Even if the other transmitter is coded, and yours is non-coded, your receiver may still give an inaccurate reading. To avoid signal crosstalk, keep a 3-foot distance from other transmitters.

The coded transmitter and receiver system does not pick up the signal from other heart rate monitors. In case of false readings with a coded transmitter and receiver, check if the code has been locked. After a successful code search, a frame will appear around the heart symbol on the display. If the frames around the heart cannot be seen, start the measurement again and check that you are not near other heart rate monitor users, because they may interfere with the code search. Also, high voltage power lines, televisions, mobile phones and other sources of electromagnetic disturbance may interfere with the code search, as well as keeping the receiver too close to the transmitter.

6. Static electricity, technical sportswear, and special conditions

If the humidity of the air is low, or you are exercising in windy conditions (for example high-speed road racing), a fluttering shirt may rub the transmitter and generate static electricity. This causes additional signals, especially if the contact between skin and transmitter is poor. To avoid this:

6.1. Moisten the electrodes before use, or use the conductive lotion or gel
6.2. Use a cotton shirt instead of a synthetic shirt
6.3. Use a tighter shirt to avoid fluttering of the material
6.4. Use the transmitter on a wet shirt
6.5. Wet the shirt

7. Medial Conditions: Arrhythmia, Atrial Fibrillation, Bundle Branch Blocks, etc.

Polar Heart Rate Monitors are not designed to detect arrhythmia or irregular rhythms and will interpret them as noise or interference. The computer in the wrist receiver will make error corrections, so that arrhythmia beats are not included in the averaged beats per minute. The blinking heart symbol in the face of the wrist receiver, however, will continue to show all heart beats received. In most cases the Polar heart rate monitors will work fine for persons with arrhythmia.

There are a very small number of cases where a Polar HRM will not work due to a medical condition, for example: low voltage R-wave signals, atrial fibrillation or bundle branch blocks.

8. Battery of the transmitter is getting weak

The estimated average battery life of the Polar Transmitter is 2500 hours of use. If the battery of the transmitter is running low, the transmission range decreases and may cause errors similar to the ones listed above in this document. See more on the Battery in the Polar Transmitter document.