Performance level Continuous optical heart rate - FAQ

**What is performance level continuous optical heart rate?**

Performance level continuous optical heart rate, developed by Mio Global in partnership with Philips, measures every beat of your heart in real-time using two green LEDs and an electro-optical cell. Integrated to the back plate of the miCoach SMART RUN, the LEDs shine light in to the skin, which then enables the electro-optical cell to detect the pulsing volume of blood flow.

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Electro-optical cell detects changes in volume of blood flow

LEDs illuminate blood flow

**This technology has been around for years, what’s new?**

Optical heart rate measurement has been used in hospitals for some time however, it has not been suitable for active situations due to the disturbance of other signals generated by movement. With an accelerometer in the OHR sensor package, movement data is fed into an algorithm that compensates for the disturbance to output a clean heart rate signal in performance scenarios.

**Why is it needed?**

Real-time heart rate measurement is the best way to track the body’s response to exertion, which leads to more efficient training. Chest based wireless sensors have proved very effective for this though the hassle of wearing them is objectionable for many users. By integrating the sensor in the back of a running watch you get all the benefits with none of the hassles.

**How accurate is it?**

A study carried out by San Francisco State university compared the Mio heart rate accuracy to a standard EKG signal. MIO’s optical HR technology showed a high correlation of 0.99 at 4mph and 6 mph, with an average difference between devices at all speeds of 0.26 ±1.13 beats/min (mean ± SEM). Throughout the treadmill test MIO Alpha’s HR was within 5 beats/min of EKG 97% of the time. Additionally, to test the limits of the MIO Alpha, a single subject was tested at their maximal running speed of 14.4 mph. During the 1-minute trial the average difference between MIO Alpha and EKG was ±1 beat/min.

**Note to editors:**

**About MIO Global (Physical Enterprises Inc.)**

MIO Global is a pioneer in the field of heart rate monitoring. Started in 1999 by Liz Dickinson, former tech executive turned entrepreneur and mother of 3, MIO Global continues to lead the world in the development, design and manufacture of cutting edge heart rate monitoring technologies for sport and fitness.  In 2013 Mio Global released the world’s first performance level continuous heart rate watch without a chest strap. To help it achieve commercialization of this technological breakthrough, in 2012, Hydra Ventures (fully-owned corporate venturing arm of adidas AG) invested in Mio Global.

Through the Hydra Ventures investment, brand adidas formed a partnership with Mio that gave them access to the award winning Mio continuous heart rate technology. Today, the companies are working together to integrate this technology into future adidas miCoach products and services.