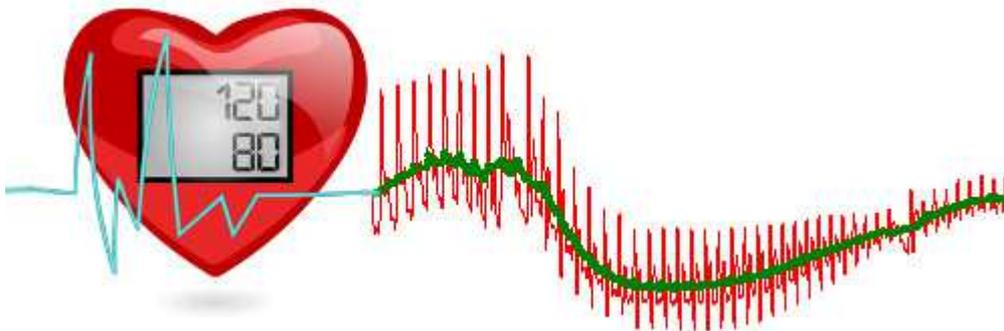


Blood pressure control and interesting indexes

The blood transports oxygen, carbon dioxide, nutrients, waste products and hormones to and from the cells in the body. This is why the control of the cardiovascular system is as critical as it's interesting.



Why measure continuous blood pressure?

The regulatory system has several complex interacting parts and therefore, there are also many interesting markers that can be obtained from blood pressure measurements, preferably correlated with ECG. These provide information about both the body's medical and psychophysiological conditions (stress). This is why it can be very valuable in many applications to obtain and analyze blood pressure data.

Blood circulation consists schematically of the heart, the vascular system, and the blood itself. From the perspective of the heart, we can describe the blood circulation by:

$$\text{MAP} - \text{CVP} = \text{SVR} * \text{CO}$$

$$\text{Pump pressure} = \text{Vascular Resistance} * \text{Flow}$$

Central control of heart and blood volume

While the heart has an autonomy whose pace is dictated by the sinus node at the top of the right atrium, there is a central modulation via the autonomic nervous system (ANS). The baroreflex also provides rapid negative feedback on heart rate.

Hormones are also part of the central control. There are hormone systems that affect the heart, vascular contraction, and regulate fluid and salt balance and thus blood volume. Increased blood volume increases blood pressure.

Lokal demand-based control of vascular resistance

As the need for blood supply in the body's various organs varies, local mechanisms are needed to control how much of the systemic blood flow is routed to different parts of the body. This is done, partially by locally-demanded vasomotor modulation of vascular resistance involving CO₂ and NO.

Some interesting parameters to measure from blood pressure

- Systolic (SBP) and diastolic (DBP) pressure can be easily measured with an upper arm cuff. This is the every day "blood pressure measurement", which can vary with activity,

stress, food, circadian rhythm and disease etc.

If you have the opportunity to measure the continuous blood pressure together with a simple ECG as a function of time, there are a few additional high-key parameters to be found:

- **BRS – Baroreflex Sensitivity**
- **PPV – Pulse Pressure Variation**
- **SV – Stroke Volume**
- **CO – Cardiac Output**
- **SVR – Systemic Vascular Res**
- **HRV – Heart Rate Variability**



What equipment do you need to measure this?

NIBP100D-HD, MP160 research system and either the **wireless or the wired ECG** and alternatively an **bioimpedance amplifier**. Contact us and we will tell you exactly what you need to get a turnkey system for your application. We can also show examples of how the signals and analysis look.

More about blood pressure (swedish) »

Don't hesitate to contact us at biopac@jor.se with a short description of your situation and we are happy to give you tailored advice!

We also have research systems with more features.



Skulle du föredra att få dessa nyhetsbrev på svenska i fortsättningen?
Skicka ett mejl till biopac@jor.se och meddela oss.

Vill du avregistrera dig från vårt nyhetsbrev? [Avregistrera dig här »](#)
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