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## Where should I place my Electrocardiography (ECG) electrodes?

We will have a look at the bipolar Einthoven leads I-III, see Figure 1, which we can use to acquire an ECG signal with the PLUX ECG sensors. The first lead (I) is the measurement from RA (-) to LA (+), as our example above. The second lead (II) measures from RA (-) to LL (+) and the third lead (III) measures from LA (-) to LL (+). Read more in our [BITalino Lab Guides \(Home Guides\)](#).

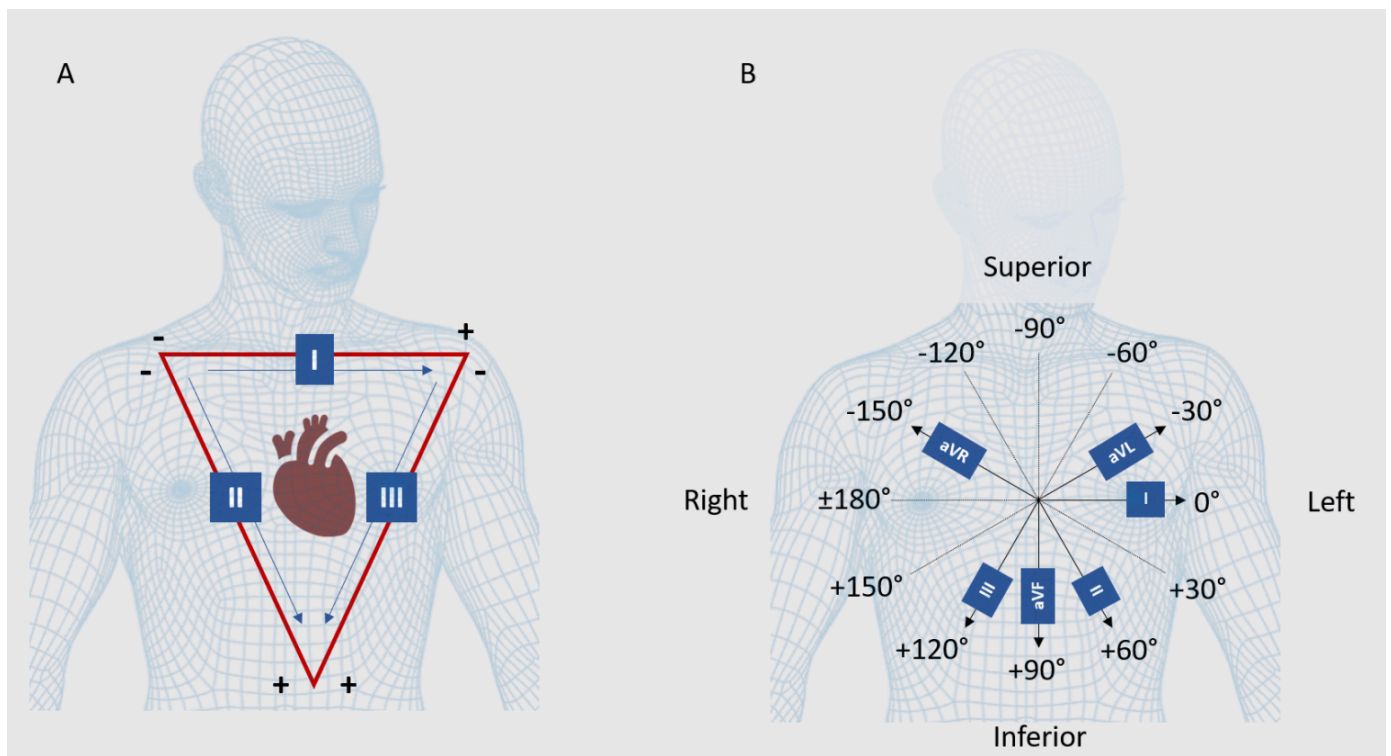
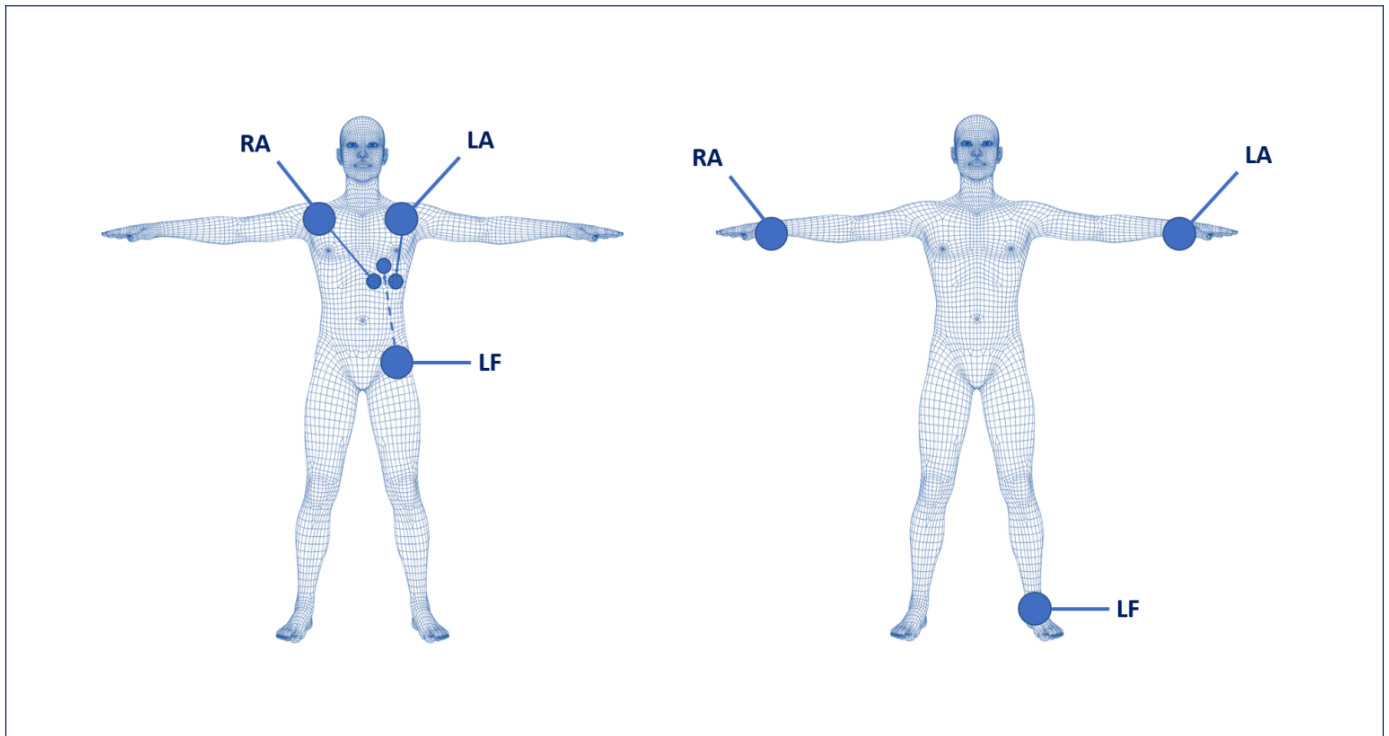


Figure 1: Einthoven Leads I-III (A) and angle (B).

We can measure the ECG signal for leads I-III in different locations such as on the collarbones, on the chest, or on the wrists, see Figure 2.

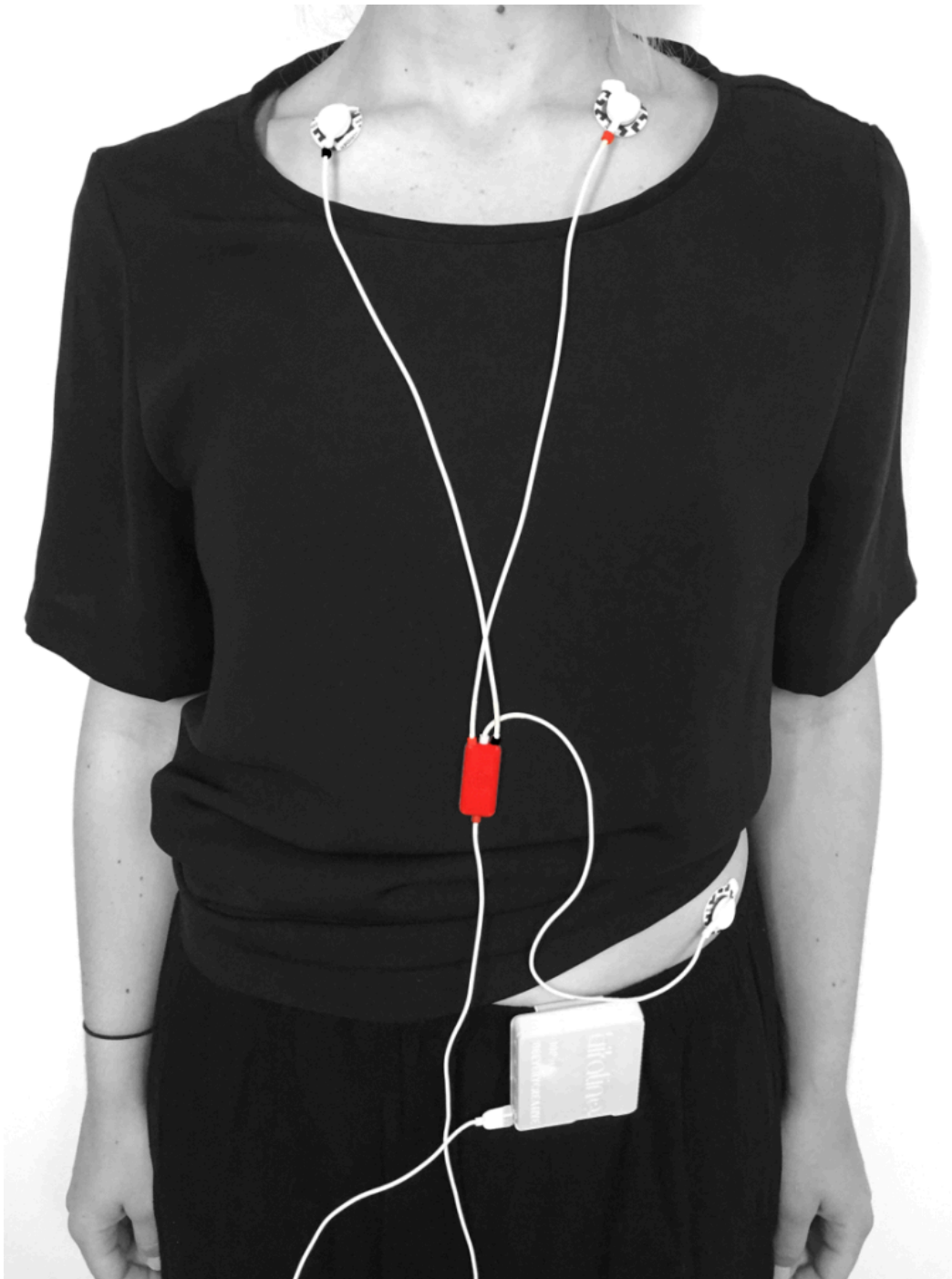


*Figure 2: Possible locations to measure the Leads I-III.*

In this article we will show you how to place the **BITalino assembled ECG** sensor in different locations. The assembled BITalino ECG sensor measures the signal in between the two measuring electrode cables (red and black) and we will have to place a reference electrode on a neutral area (bone).

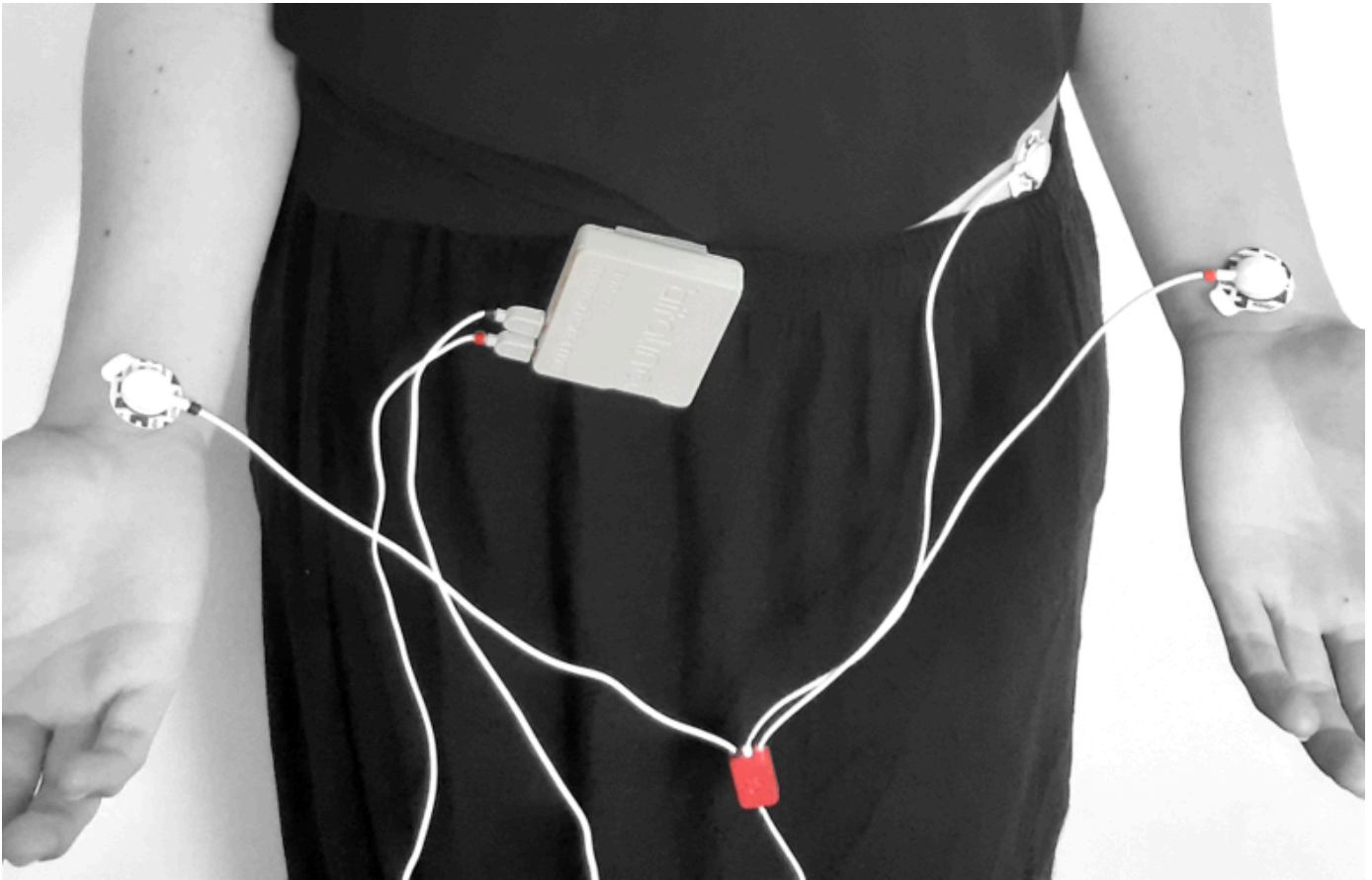
## Lead I – Collarbones

Figure 3 illustrates one possible setup of the assembled BITalino ECG sensor for Einthoven Lead I on the collarbones and the iliac crest. The positive electrode (red) is located on the left collarbone (LA) and the negative (black) electrode on the right collarbone (RA). The reference (REF) in white is placed on the iliac crest.



*Figure 3: ECG Lead I - measuring electrodes on the collarbones and reference electrode on the iliac crest.*

## Lead I - Wrists



*Figure 4: ECG Lead I – measuring electrodes positioned on wrists, reference on iliac crest.*

## Lead II and Lead III

When acquiring ECG data using the Einthoven Lead II, exchange the positive (red) and the reference (white) electrodes with each other according to Figure 1 (left). For Einthoven Lead III exchange the negative (black) and the reference (white) from the setup of Lead II with each other according to Figure 1 (left).

## Note

To receive the most qualitative ECG signal and to distinguish all PQRS complexes from each other, the electrodes should be placed near the heart on the chest, see Figure 2 (left).

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Tagged: bitalino ECG Electrocardiography electrode positioning

## About The Author

**PLUX Biosignals**



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