

Experiment HH-3: Exercise, the Electrocardiogram, and Peripheral Circulation

Equipment Required

PC or Mac Computer

IWX/214, USB cable, IWX/214 power supply

C-AAMI-504 ECG cable and electrode lead wires

PT-104 Pulse plethysmograph

FT-325 Hand dynamometer

Alcohol swabs

Disposable ECG electrodes

Start the Software

1. Click on LabScribe
2. Click Settings → Human Heart → Exercise-ECG-Circulation
3. Once the settings file has been loaded, click the **Experiment** button on the toolbar to open any of the following documents:
 - Appendix
 - Background
 - Labs
 - Setup (opens automatically)

ECG Cable and Pulse Transducer Setup

1. Locate the C-AAMI-504 ECG cable and electrode lead wires ([Figure HH-3-S1](#)), and PT-104 pulse plethysmograph ([Figure HH-3-S2](#)), in the iWorx kit.
2. Plug the DIN8 connector to the PT-104 into the Channel 3 input of the IWX/214 ([Figure HH-3-S3](#)).
3. Insert the black AAMI connector on the end of the ECG cable into the isolated inputs of Channels 1 and 2 of the IWX/214.
4. Insert the connectors on the red, black, and green electrode lead wires into the matching sockets on the lead pedestal of the ECG cable.
5. Instruct the subject to remove all jewelry from their wrists and ankles. As an option, using the area just under each clavicle will give a better recording.
6. Use an alcohol swab to clean and scrub a region with little or no hair, on the inside of the subject's right wrist/clavicle. Let the area dry.
7. Remove a disposable ECG electrode from its plastic shield, and apply the electrode to the scrubbed area on the wrist/clavicle.



Figure HH-3-S1: The C-AAMI-504 ECG cable with three lead wires attached.



Figure HH-3-S2: The PT-104 pulse plethysmograph.

8. Repeat Steps 6 and 7 for the inside of the left wrist/clavicle and the inside of the right ankle.
9. Snap the lead wires onto the electrodes, so that:
 - the red (+1) lead is attached to the right wrist or under the right clavicle,
 - the black (-1) lead is connected to the left wrist or under the left clavicle,
 - the green (C or ground) lead is connected to the right leg or on the abdomen.
10. Place the plethysmograph on the volar surface (where the fingerprints are located) of the distal segment of the subject's middle finger or thumb, and wrap the Velcro strap around the end of the finger to attach the unit firmly in place.
11. Instruct the subject to sit quietly with their hands in their lap. If the subject moves, the ECG trace will move off the top or bottom of the screen. If the subject moves any muscles in the arms or upper body, electromyograms (EMGs) from the muscles will appear on the ECG recording as noise.



Figure HH-3-S3: The ECG cable and pulse transducer connected to an IWX/214.