



SOP 32: ECG and respiration belt use with the Biopac MP150 using RSPEC-R

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DATE OF NEXT SCHEDULED REVIEW (dd/mm/yyyy)	1	3		0	2		2	0	2	1
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Table of Contents	Page
1. PURPOSE	2
2. PERSONNEL REQUIRED AND LEVEL OF EXPERTISE	2
3. MATERIALS	2
4. PROCEDURE	2
4.1 When	2
4.2 How (ECG)	2
4.3 How (Respiration)	3
5. TROUBLE SHOOTING	4
Definitions/Abbreviations	
SOP	Standard Operating Procedure
ECG	Electrocardiogram

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1. PURPOSE:

To provide step-by-step instructions to all persons using ECG and respiration belt in use with the RSPEC-R with the Biopac MP150 for research purposes.

2. PERSONNEL REQUIRED AND LEVEL OF EXPERTISE:

- Investigator or research team.

3. MATERIALS AND EQUIPMENT REQUIRED:

ECG

- Disposable electrodes
- Electrode gel
- Biopac MP150
- Biopac RSPEC-R
- Laptop running AcqKnowledge
- Bionomadix transmitter
- Wipes suitable for skin

Breathing Rate

- Respiration Belt
- Biopac MP150
- Biopac RSPEC-R
- Laptop running AcqKnowledge
- Bionomadix transmitter

4. PROCEDURE:

4.1. When to use

In studies acquiring ECG and respiration data using the Biopac and RSPEC-R.

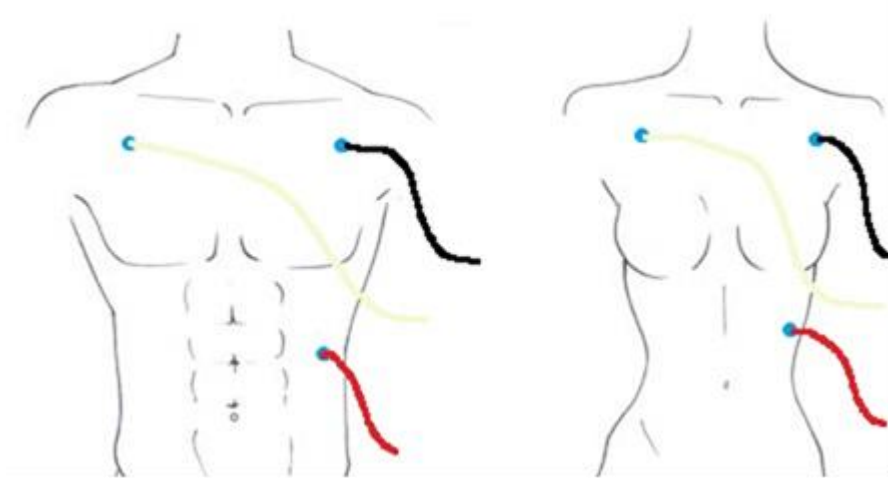
4.2. How to attach ECG (on the chest)

Apply a small amount of gel (less than a pea) to the centre of three electrodes on the green gauze. Place one electrode on the participant's right upper chest just underneath their collarbone, one on their left upper chest just underneath their collarbone and one on the participant's left side at the bottom of the ribcage. To attach the Bionomadix, insert the lead wires into the ECG slot then attach the wires to the electrodes by clipping them onto the metal protrusion. The white lead goes to their right upper chest, and the black lead goes to their left upper chest. The red lead should go to their lower left under the ribcage (see Figure 1 below).

NB: this can also be done with ankle and wrists but longer wires would be required.

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Figure 1. An illustration of the placement of electrodes and wires when collecting ECG data.



Before starting to collect the study data, a test should be completed as follows:

Turn on the Biopac and the Bionomadix. Select a graph template in AcqKnowledge and connect the MP150 then click start. Ask the participant to sit still and relax, you should then observe the data. Ask the participant to breathe deeply or move and observe the changes in the data. If you are calculating heart rate this may take a few seconds, so it is normal for the graph to read 0 to start. If the readings look abnormal or fluctuate when the participant moves then make sure the electrodes are stuck down well. If the problem persists you may need to place the electrodes in a better position or tape the wires to the skin to reduce their movement.

4.3 How to attach Respiration Belt

Placing the small plastic part of the belt in the centre of the chest (i.e. in line with the navel) attach and adjust the belt using the Velcro straps. It is advisable to tighten the belt while the participant has exhaled all the air from their lungs. The participant should be able to take deep breaths without feeling like the belt is restricting them or the belt becoming loose when exhaling. For accurate placement of the belt observe whether the participant breathes from their chest area or stomach and move the belt to the area of maximum movement. Attach the wires to the Bionomadix transmitter in the RSP slot.

Before starting to collect the study data, a test should be completed as follows:

Turn on the Biopac and the transmitter. Select a graph template in AcqKnowledge and connect the MP150, then click start. Ask the participant to breathe normally, observe data on the AcqKnowledge software, the RSP line should incline as the participant inhales and decline as they exhale. Ask participant to take long deep breaths. You should then observe any changes. Breathing rate should be at 0 for the first few seconds but once a reading is given it should not hit 0 again. If it does, ask the participant whether the belt feels too tight or too loose and adjust accordingly, then repeat the test.

SOP 32: ECG and respiration belt use with the Biopac MP150 using RSPEC-R

5. TROUBLE SHOOTING:

Problem	Solution
Any problems	Dr Angela Attwood (0117) 331 7814 internal 17814
Technical advice or faulty equipment	Linton Instrumentation mail@lintoninst.co.uk service@lintoninst.co.uk (01379) 651 344
Reporting guidance or advice	Dr Angela Attwood (0117) 331 7814 internal 17814 Prof Marcus Munafò (0117) 954 6841 internal 46841 Marcus.Munafò@bristol.ac.uk