User Guide
Respiration

This user guide has been created to educate and inform the reader about doing respiration measurements

For more information about NeXus, our BioTrace+ software, please visit our website or contact us.

www.mindmedia.com

V1.0

Contents

Introduction

This manual provides a step-by-step review of how to do respiration measurements with the NeXus-4, NeXus-10 or NeXus-32. The manual provides information about the required hardware, preparation and measurement steps, artefacts (appendix 1), and care of materials (appendix 2).

Required Equipment

The following is required to perform respiration measurements:

- Nexus-4, NeXus-10 or NeXus-32
- Respiration Sensor
- Elastic Respiration Belt (Small or Large)

Respiration measurement setup

Before the actual measurement can start, the equipment has to be connected. Detailed information on setting up the NeXus can be found in the NeXus User Manual or Quick Start.

Connect the respiration sensor to input D of the NeXus-4, input H of the NeXus-10 or input 31 of the NeXus-32. Make sure the red dot of the connector is facing downward with the NeXus-4 or NeXus-10 or upward with the NeXus-32.


Sensors can be disconnected by pulling the silver ribbed part of the connector backward.

Attach the respiration belt to the respiration sensor.

Place the respiration sensor on the chest (A) or on the abdomen (B), with the central part of the sensor just above the navel. For biofeedback and relaxation training mostly the abdomen position is used.
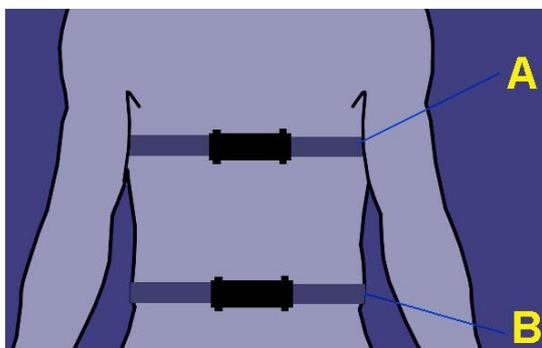
When placing the sensor, make sure it is neither too tight nor too loose. The elastic belt must always remain under some tension. The sensor can be worn over clothing but make sure the belt stretches with inhalation and reverts back with exhalation.

Now go to chapter 'BioTrace+' for further instructions.

BioTrace+

Start the BioTrace+ Software.
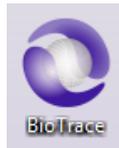
Select **Signal Library**.
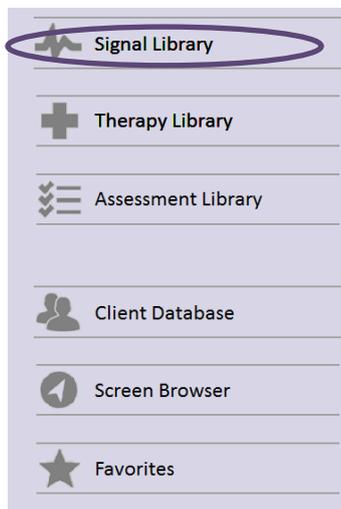
Select **respiration**.
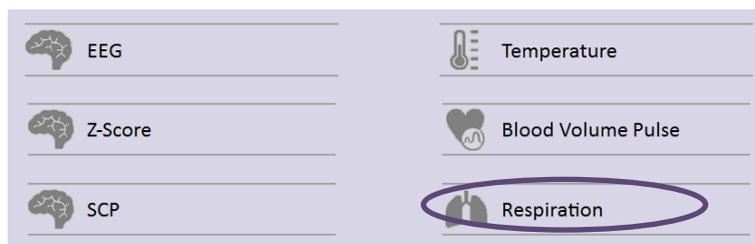
Select your preferred measurement screen (e.g. Resp Basic).
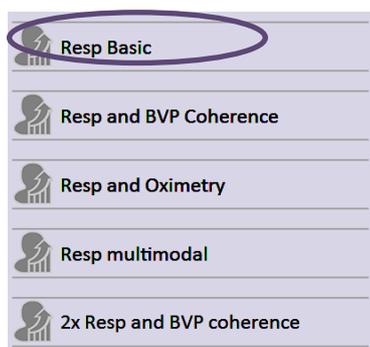
Switch the NeXus on.

Click the **recording** button.

The *select a client* dialog box will appear.

Select a client and click **Continue...** or click **Add New** for adding a new client.

The *New session recording* screen will appear. Click **Start Recording** to start recording a session.
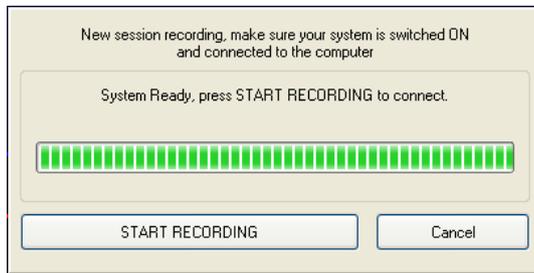
It is possible to show and hide the bar graph feedback on the client screen

 Show graph on client screen

 Hide graph on client screen

Click the following icon to set the respiration pacer (or go to the top menu and select Configuration > RSP/HRV Pacer Settings).

This will open the Respiratory Pacer Settings screen.
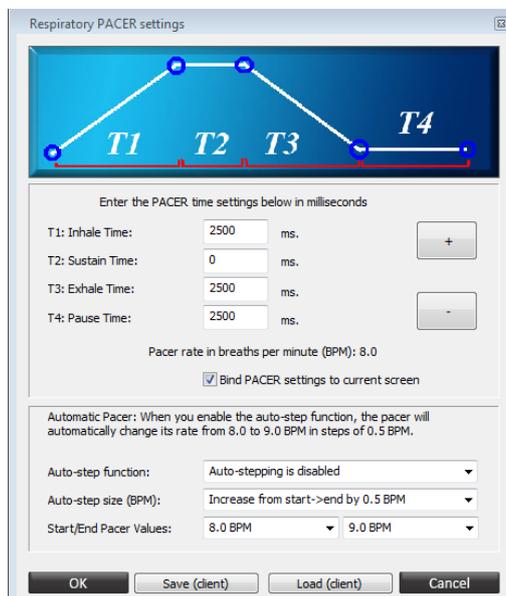
The following parameters can be set (time entered in milliseconds):
- *T1 Inhale Time*: the time it takes to go from baseline (0) to the maximum (inhale).
- *T2 Sustain Time*: the time the signal will be sustained (hold) at maximum.
- *T3 Exhale Time*: the time the signal will drop from maximum to baseline (exhale).
- *T4 Pause Time*: the 'pause time' in between this and the next cycle.
Based on these parameters, a pacer rate in breaths per minutes (BPM) will be calculated.

Click the **+** and **-** button to change the pacer rate while maintaining the same ratios.

Use the **+** and **–** keyboard keys during a session in order to speed up or slow down the pacer. Check **Bind pacer settings...** to always have the same setting for the loaded screen.


A pacer can be set to change over time with a preset start/end and with a pre-set step size.
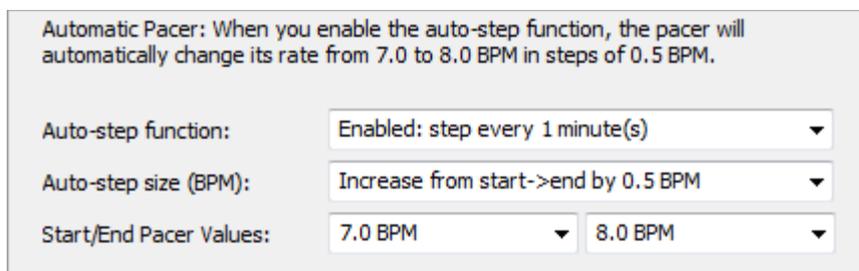
Click **OK**

Feedback Type Controls are shown on the right side of a training screen.

Press the Windows logo key ⊞ +P for extending display to dual monitor setup

Select one of the feedback options that are available on the right side.
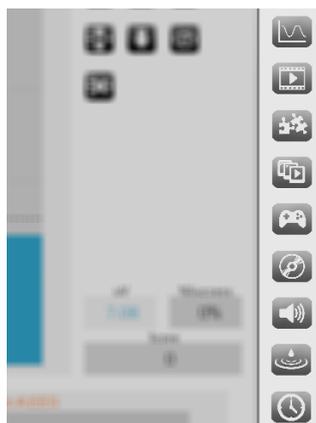
Graph	Graph + pacer
Pacer bar graph	Animation
Audio	

Select other content during a recording by clicking the change feedback icon in the right top corner. This can only be used with videos, animations, games, puzzles, and audio.

Markers can define a certain event during a recording. These markers can be added manually by pressing *the marker symbol* in *Session controls in the left bottom corner* (or by pressing **Enter**):

The following dialog box appears for naming markers.

Please enter the text of the session MARKER

Marker:1

OK   Cancel
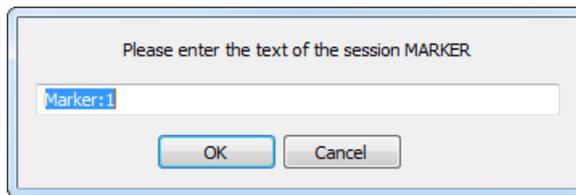
In order to stop the recording, click the **stop** button.

An alert box will appear.

Stop and SAVE this Session: YES or NO?
Choose CONTINUE to continue recording.

Yes   Continue...   No
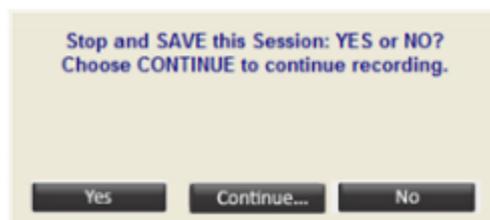
Click **Yes** and save the session and enter a description of the session.

Enter your description line for this session

My First Session

OK   Cancel
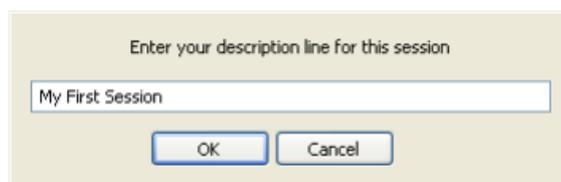
Confirm by clicking **OK**, the session is now saved.

Appendix 1: Artifacts

- **Movement artifacts**
Be aware that body movements other than breathing lead to artifacts. Usually a sitting position is used

Appendix 2: Care of materials

NeXus Respiration Sensor cleaning

The NeXus Respiration Sensor can only be cleaned. There are no procedures or prescriptions for disinfecting.

The sensor cable can be cleaned with lukewarm water or alcohol prep pads (do not submerge in water or in alcohol solution).

The respiration belt (note: not the respiration sensor itself) can be cleaned with a soapy hand wash, preferably at a low, lukewarm temperature.

Please avoid cleaning the connector, as this may affect its performance.