

User Guide

BVP – Heart rate

This user guide has been created to educate and inform the reader about doing blood volume pulse measurements

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

www.mindmedia.com

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Contents

Introduction.....	3
Required Equipment	4
Blood Volume Pulse measurement setup	5
Finger placement	5
Head placement.....	6
Earlobe placement.....	7
BioTrace+	8
Appendix 1: Artifacts	12
Appendix 2: Care of materials	13

Introduction

This manual provides a step-by-step review of how to do blood volume pulse 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 Blood Volume Pulse measurements:

- Nexus-4, NeXus-10 or NeXus-32
- Blood Volume Pulse Sensor or Blood Volume Pulse Head Sensor

Blood Volume Pulse 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 Blood Volume Pulse sensor to input C of the NeXus-4, input G of the NeXus-10 or input 30 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.



Finger placement

Place the Blood Volume Pulse clip on one of the fingers. Place the clip with the cable along the upper side of the finger.



When using the Blood Volume Pulse Head sensor with an (ear)clip, it can also be attached to a finger. Please note that signal quality is poorer than with the Blood Volume Pulse Sensor.

Head placement

Palpate the heart pulse of the arteria temporalis on the head temple, using fingertips to find the correct location.

Place the Blood Volume Pulse Head Sensor right above the area of the arteria temporalis, using a head band. While monitoring the signal, move the sensor to find a good signal with sufficient amplitude. Make sure that the headband is tight enough so the BVP sensor won't move, but is still comfortable for the client.



Earlobe placement

Place the emitter and receiver of the Blood Volume Pulse Head Sensor into an (ear) clip.

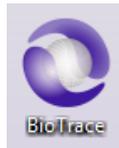
Place the ear clip on to the earlobe.

Be aware that pulling on the Blood Volume Pulse Sensor cable and sensor leads to movement artifacts.

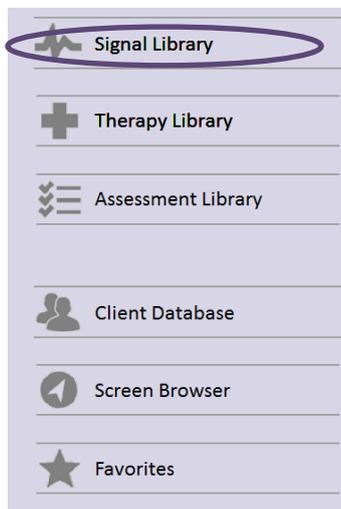
Now go to chapter 'BioTrace+' for further instructions.

BioTrace+

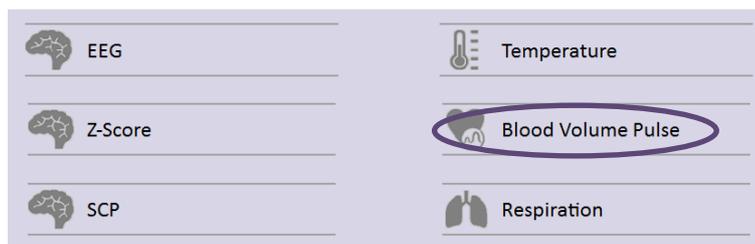
Start the BioTrace+ Software.



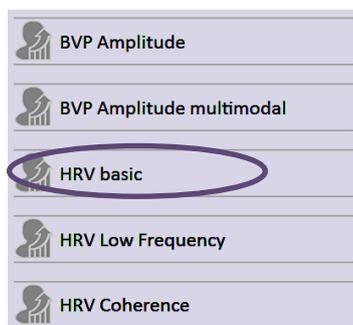
Select **Signal Library**.



Select **Blood Volume Pulse**.



Select your preferred measurement screen (e.g. HRV basic).



Switch the NeXus on.

Click the **recording** button.

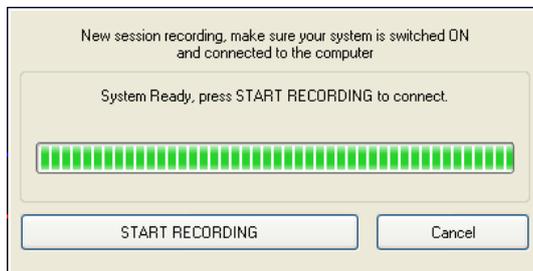


The *select a client* dialog box will appear.

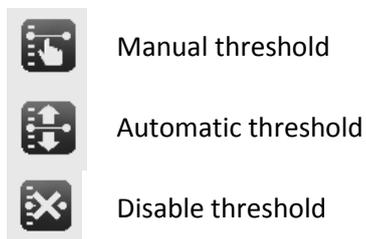


Select a client and click **Continue...** or click **Add New** for adding a new client.

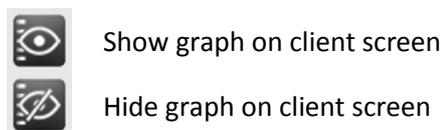
The *New session recording* screen will appear. Click **Start Recording** to start recording a session.



Set threshold setting controls of a bar graph.



It is possible to show and hide the bar graph feedback on the client screen



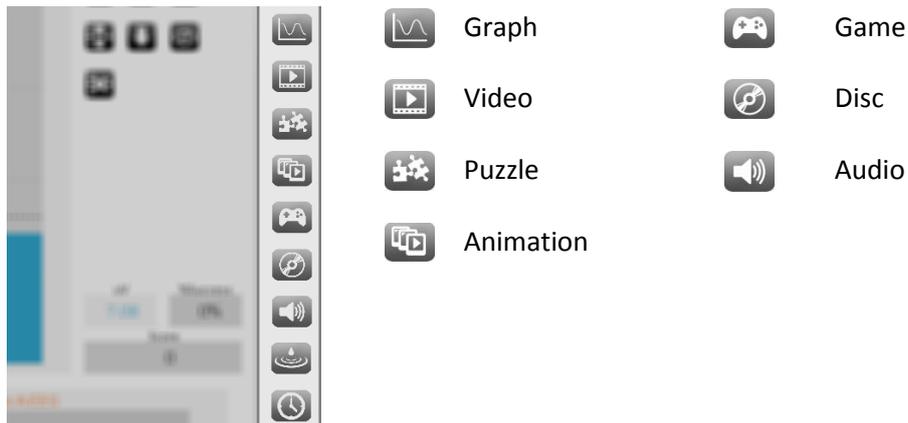
Set the training direction of a bar graph.



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.



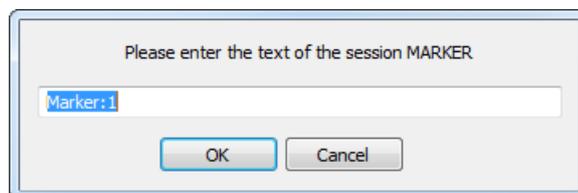
Select other content during a recording by clicking the change feedback icon in the right top corner. This can only be used with videos, animations, games, puzzles, and audio.



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.



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



An alert box will appear.



Click **Yes** and save the session and enter a description of the session.

Enter your description line for this session

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

Appendix 1: Artifacts

- **Movement artifacts**
Be aware that moving or bending the finger and pulling on the Blood Volume Pulse Sensor cable and sensor can lead to movement artifacts.
- **Temperature artifacts**
Be aware that cold hands can influence (decrease) the amplitude size of the Blood Volume Pulse signal.
- **Signal block artifacts**
Be aware that nail polish could block the Blood Volume Pulse signal or influence (decrease) the amplitude of the Blood Volume Pulse signal.

Appendix 2: Care of materials

NeXus Blood Volume Pulse Sensor cleaning

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

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

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