MINDMEDIA
NEURO AND BIOFEEDBACK SYSTEMS

User Guide

Relaxation Profile Protocol

This user guide has been created to educate and inform the reader about the Relaxation Profile Protocol.

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

www.mindmedia.com

V1.0

Contents

Introduction

The Relaxation Profile User Guide provides a step-by-step review of how to install the Relaxation Profile, how to use the Relaxation Profile and how to exporting the data to the Relaxation Profile Template. This Relaxation Profile has been developed in cooperation with Inna Khazan, PhD, BCB.

Required equipment

Depending on the chosen setup, the following is required to perform the Stress test:

- Nexus-4, NeXus-10 or NeXus-32
- Skin Conductance Sensor
- Skin Conductance electrodes (Ag/AgCl)
- Temperature Sensor
- Blood Volume Pulse Sensor
- Respiration Sensor
- EXG Sensor
- EXG Ground
- Pre-gelled EMG electrodes*

*High quality electrodes like the Meditrace or ARBO electrodes are recommended to ensure good signal quality.

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 sensors to the right NeXus inputs. Make sure the red dot of the connector is facing downward with the NeXus-10 or upward with the NeXus-32. Detailed information about sensor placement and preparation can be found in the measurement setup user guides.

Connect the EXG Ground to the Ground (Gnd) of the NeXus.

NeXus-10

C&D	EMG (EXG sensor)
E	Skin Conductance
F	Temperature
G	Blood Volume Pulse
H	Respiration

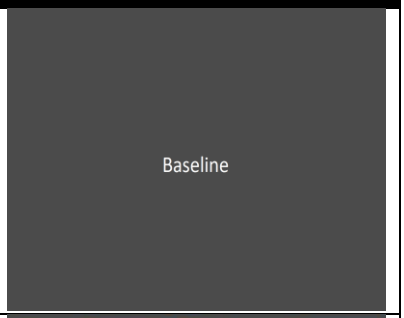
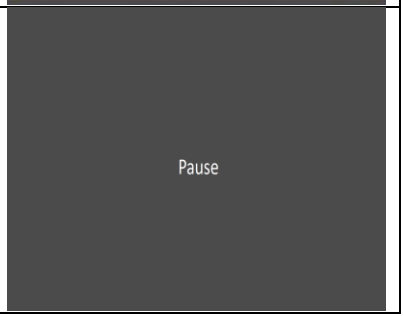
NeXus-32

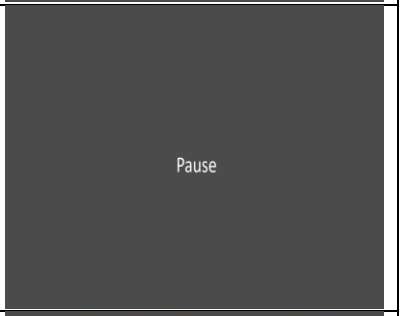
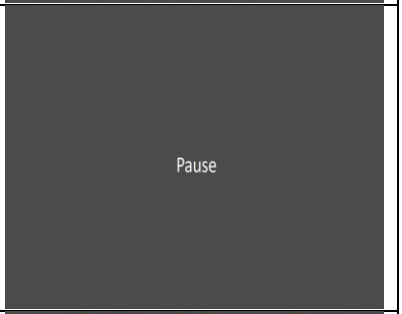
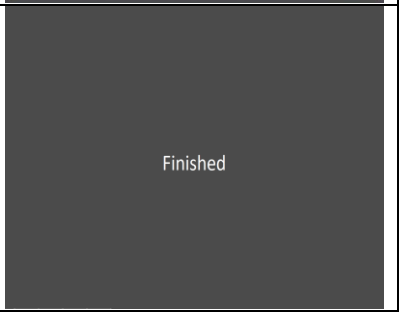
27&28	EMG (EXG sensor)
29	Skin Conductance
30	Blood Volume Pulse
31	Respiration
32	Temperature

Using the Relaxation Profile Protocol

Make sure to install the Relaxation Profile Protocol first (Appendix: Installation).

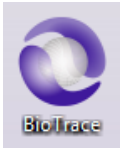
The protocol will go through the following sequence.

Screen	Duration	Segment	Marker	
Baseline	120 seconds	Baseline	Baseline	
Relaxation Technique Breathing	180 seconds	Train	Breathing	
Pause	10 seconds		Pause	
Relaxation Technique Passive Muscle Relaxation	180 seconds	Train	Passive M. Relaxation	
Pause	10 seconds		Pause	

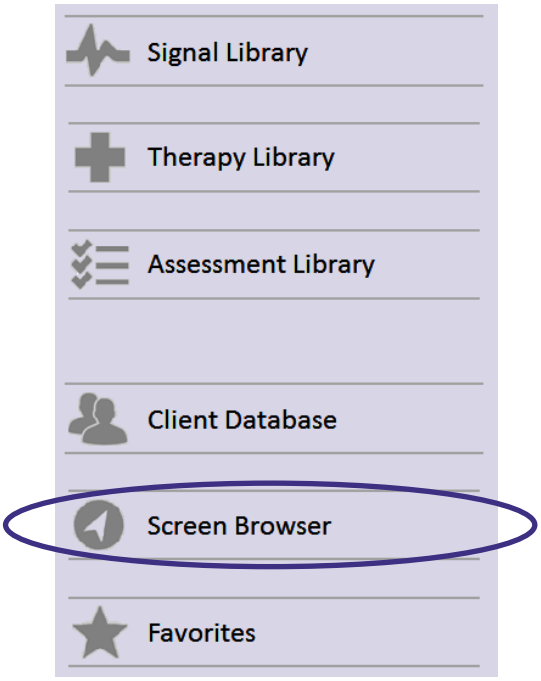
Relaxation Technique Progressive Muscle Relaxation	180 seconds	Train	Progressive M. Relaxation	
Pause	10 seconds		Pause	
Relaxation Technique Autogenic Training	180 seconds	Train	Autogenic Training	
Pause	10 seconds		Pause	
Relaxation Technique Guided Imagery	180 seconds	Train	Guided Imagery	
Finished			Finished	

Each segment will automatically be color coded in the session overview, including markers describing the relaxation technique for that particular segment.

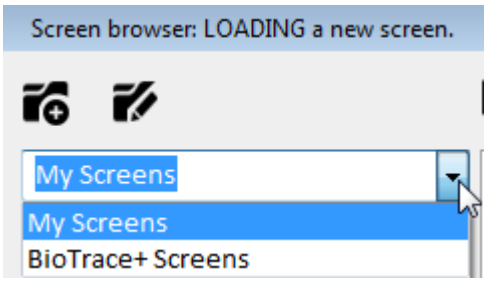
Open BioTrace+.



Select ‘Screen Browser’.

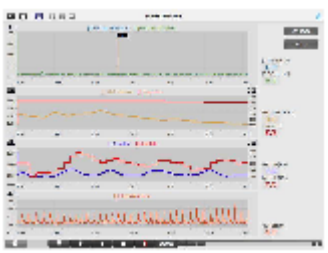


Select ‘My Screens’.

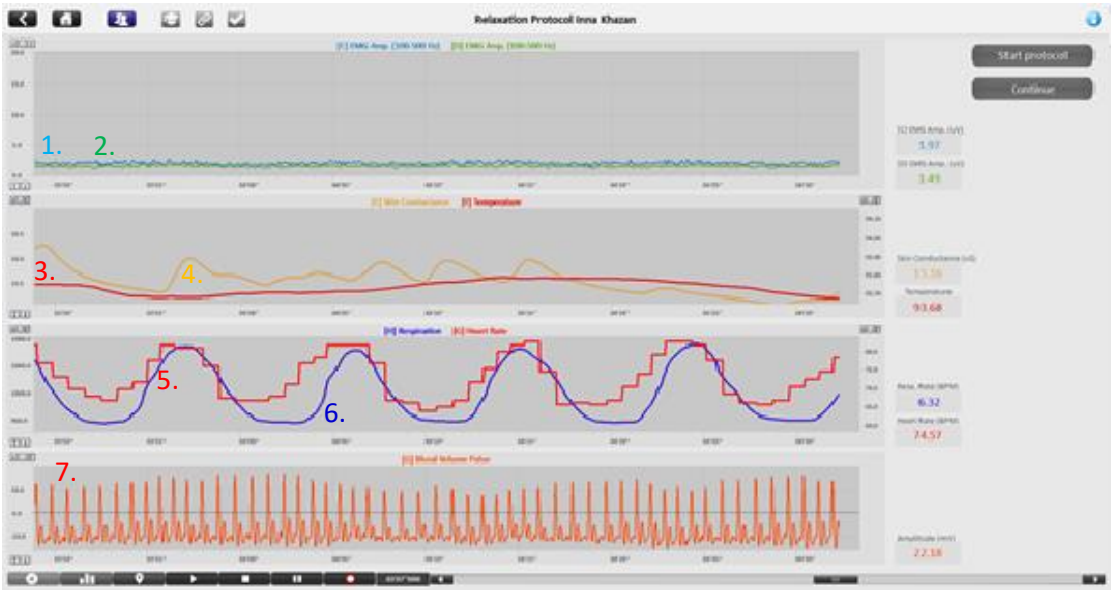


Select ‘Relaxation Protocol Inna Khazan’.

Double Click ‘Relaxation Protocol’ screen to open the therapist screen.



The therapist screen will be opened.



The following is displayed in the therapist screen: EMG (1); EMG (2); Temperature (3); Skin Conductance (4); Heart Rate (5); Breathing pattern (6); Blood Volume Pulse (7).

Turn on the NeXus device.

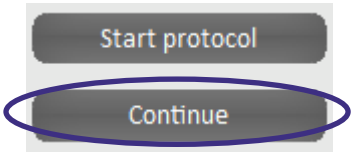
Start a recording.

Visually inspect the recorded signal to identify and prevent artifacts.

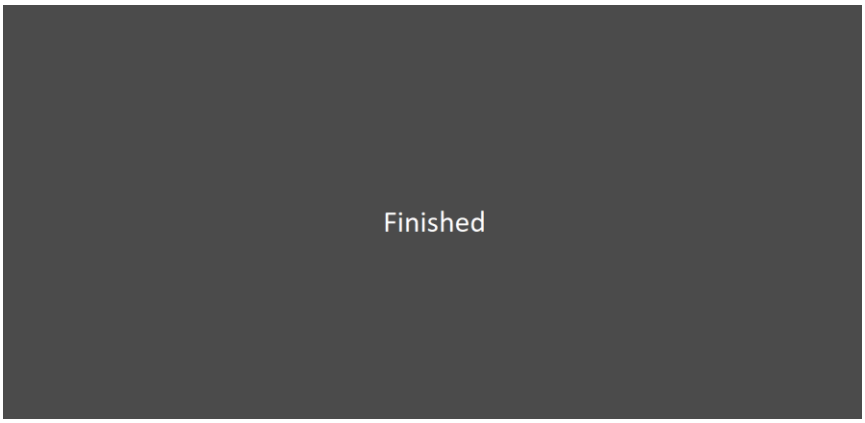
The actual Relaxation Profile protocol is started by clicking the 'Start protocol' button in the right top corner.

A dual monitor setup is recommended. Press the Windows logo key +P for extending display to dual monitor setup. The protocol will be opened automatically on the second monitor. When using a single monitor setup the protocol will be opened on the first screen.

Optionally use the 'Continue' button to proceed to the next screen in the protocol.



Once the protocol is finished, the recording will stop.

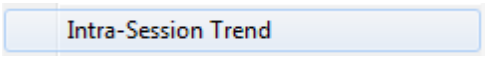


Click ‘Yes’ to save the session and to enter a description of the session. Confirm by clicking ‘OK’, the session is now saved.

Analysis and export to Relaxation Profile Template

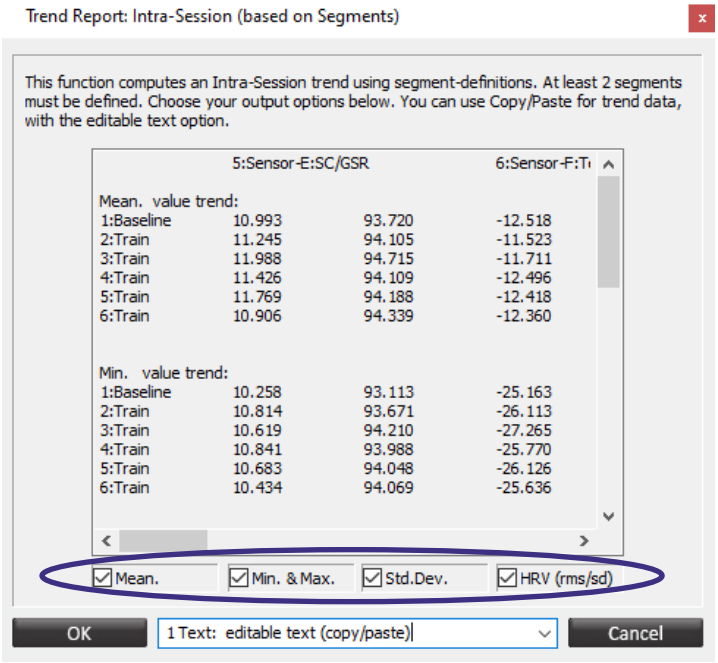
Data can be reviewed in the *Session Overview* by clicking the following button in the Session Control Bar. Statistics of the *Session Overview* can be copied to the Relaxation Profile Template.

Right-click the *Session Overview* screen and choose 'Intra-session trend'.

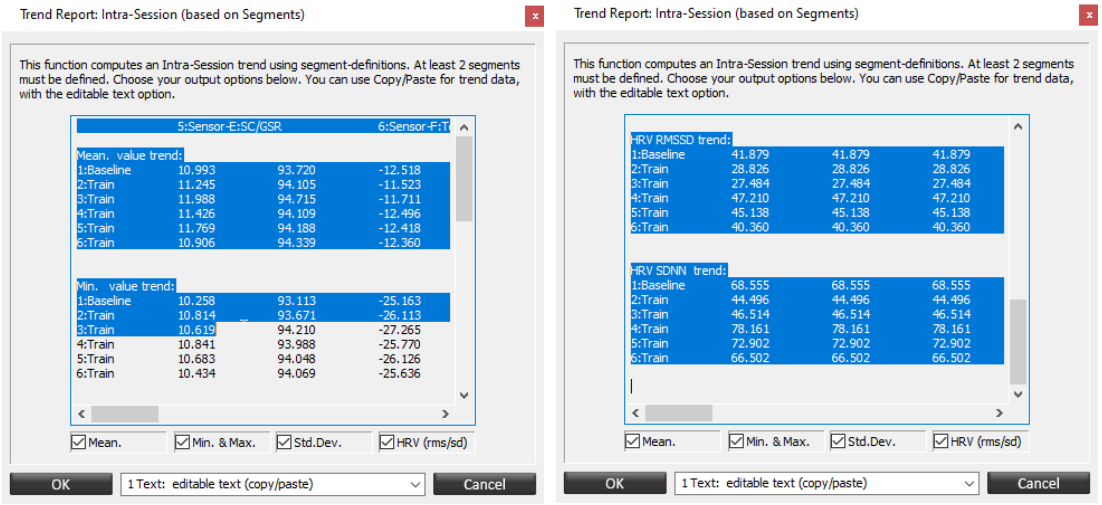


The *Trend Report* screen will appear.

Select the 'Mean', 'Min. & Max.', 'Std.Dev.' and 'HRV' output options for all statistics.

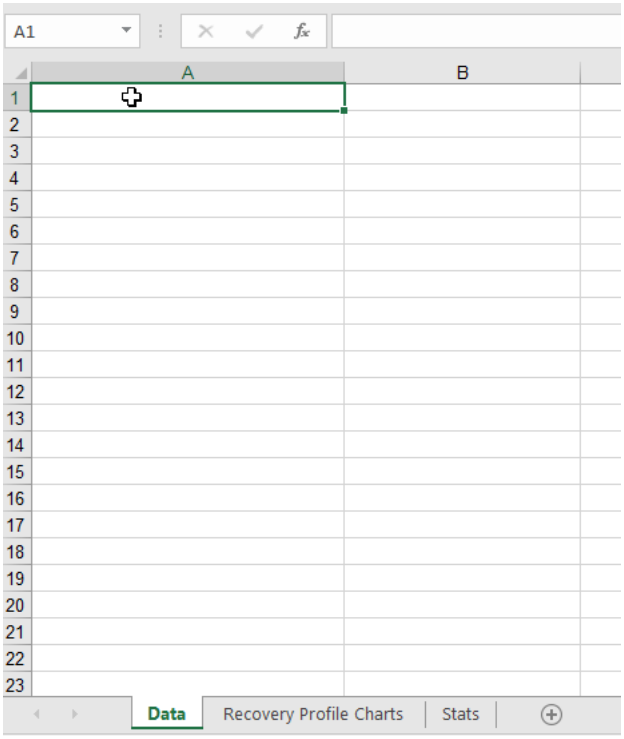


Select <u>all</u> data in the Trend Report by dragging the left mouse button.



Right click on the selected data and choose 'Copy'.

Open the Relaxation Profile Excel Template and right click on the first cell (A1) in the 'Data' tab.

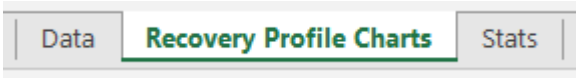


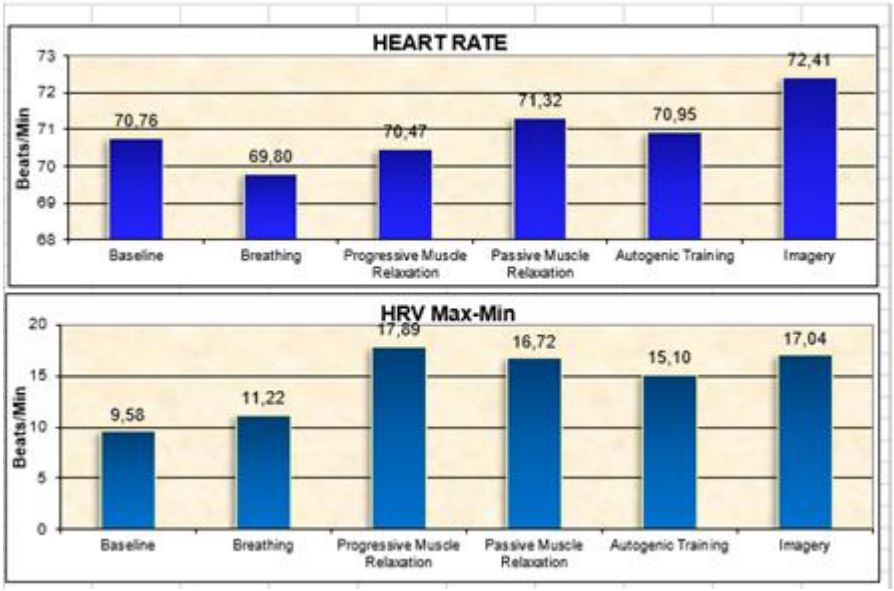
Choose 'Paste' to copy all statistics to the Relaxation Profile Excel Template.

	A	B	C
1		5:Sensor-E:SC/GSR	6:Sensor-F:Temp.
2			
3	Mean. value trend:		
4	1:Baseline	10.993	93.720
5	2:Train	11.168	94.615
6	3:Train	12.246	94.346
7	4:Train	11.319	94.150
8	5:Train	11.274	94.242
9	6:Train	11.247	94.857
10			
11			
12	Min. value trend:		
13	1:Baseline	10.258	93.113
14	2:Train	10.619	93.905
15	3:Train	11.152	93.988
16	4:Train	10.683	93.993
17	5:Train	10.463	94.062
18	6:Train	10.428	94.628
19			
20			
21	Max. value trend:		

Data | Recovery Profile Charts | Stats

Under the second tab 'Relaxation Profile Charts' tab, the mean statistics will be displayed in bar graphs.





Under the third tab 'Stats' the mean statistics will be displayed in tables.

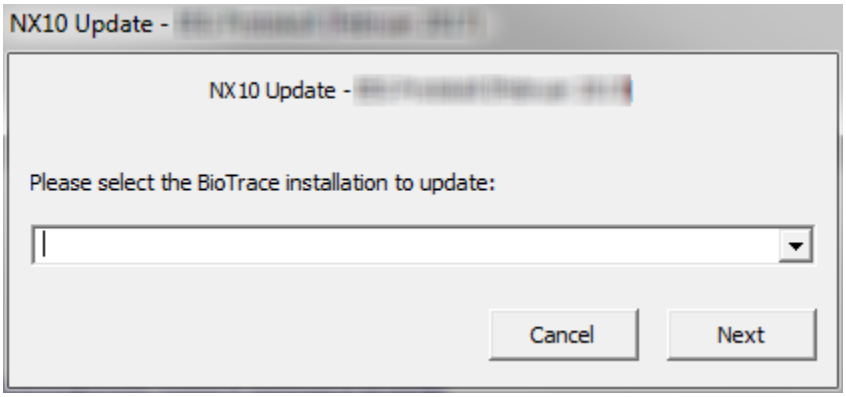
Data | Relaxation Profile Charts | **Stats**

	Baseline	Breathing	Progressive Muscle Relaxation	Passive Muscle Relaxation	Autogenic Training	Imagery
	0-2min	2-5min	5-8min	8-11min	11-14min	14-17min
HR						
Average	70,76	69,80	70,47	71,32	70,95	72,41
SDNN						
Average	93,11	44,50	52,32	82,49	72,90	67,72
Breathing Rate (BPM)						
Average	9,88	11,95	6,73	6,69	6,68	6,69
HF						
%HF	26,77	18,85	9,64	8,53	8,09	7,42
LF						
%LF	83,00	81,28	90,54	90,74	90,82	91,86
HRV Max-Min						
Average	9,58	11,22	17,89	16,72	15,10	17,04
Skin Conductance						
Average	10,99	11,17	12,25	11,32	11,27	11,25
Temperature						
Average	93,72	94,62	94,35	94,15	94,24	94,86
EMG A _ Right Trap						
Average	1,47	1,56	1,65	1,77	1,89	1,94
EMG B _ Left Trap						
Average	1,42	1,49	1,50	1,68	1,72	1,62

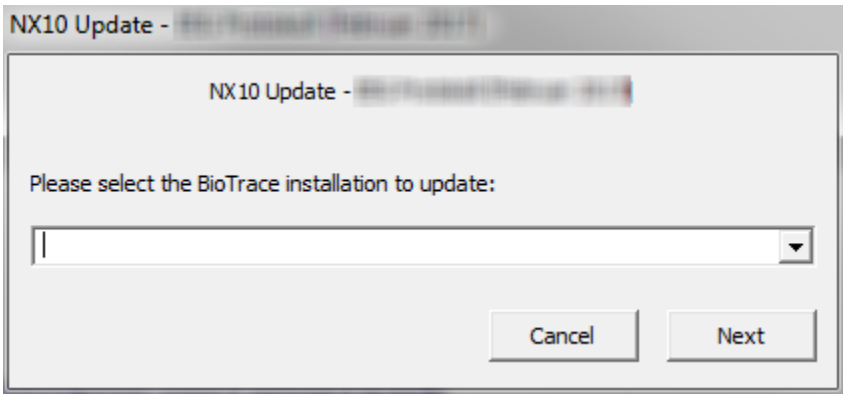
Appendix: Installation

Close the BioTrace+ software.

Open the '**NX Relaxation Profile.exe**'-file. The software will now search for BioTrace+ installations on the computer.



Select the BioTrace+ directory where the protocol needs to be installed (this step is only necessary when there are multiple versions of BioTrace+ installed) and click 'Next'.



Click 'Exit' once installation has finished.