MINDMEDIA
NEURO AND BIOFEEDBACK SYSTEMS

User Guide

Slow Cortical Potentials (SCP)

This user guide has been created to educate and inform the reader about the SCP neurofeedback training protocol for the NeXus 10 and NeXus-32 systems with the BioTrace+ software.

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

www.mindmedia.com

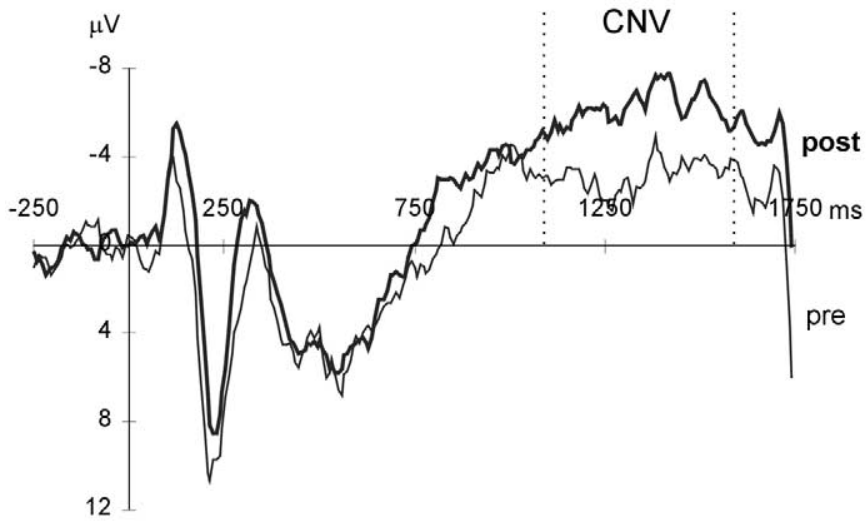
V3

Contents

1. Introduction to SCP

The slow cortical potential (SCP) is a direct current (DC) potential shift observed in the EEG when there is cortical activation or de-activation. The SCP reflects the depolarization of large cortical cell assemblies, reducing their excitation threshold, and typically lasts from 300 ms to several seconds. The SCP itself does not have an absolute DC level, it is always a "relative" change from a starting point in the DC potential of the EEG at a given time. The SCP is measured from that starting point, often described as the DC baseline level.

DC-shifts were discovered in CNV experiments (contingent negative variation) where 2 stimuli are presented to a subject. The initial warning stimulus (S1) activates/prepares the subject for the following target stimulus (S2) where the subject has to exectute a certain task. After the warning stimulus the DC-EEG typically shifts towards the negative. This effect has been replicated in hundreds of studies. It was discovered by the English neurologist W. Grey Walter and first published in 1964.



Various researchers wondered in the 1980's and 1990's whether one can learn to voluntarily control DC-EEG potentials. The university of Tübingen in Germany (professor Niels P. Birbaumer PhD, Ute Strehl PhD and others) have published a lot of research on this topic. It actually proved to be possible to train the EEG in the DC range, and thus a new form of Neurofeedback was created, which was not based on frequency based training (e.g Theta, Alpha, SMR, Beta) but on training the slow cortical potential.

Just like the CNV experiments, SCP Neurofeedback is based on a trial based training paradigm. Trials are randomized for negative/positive targets and typically last between 6-10 seconds. Each trial the client is asked to create a negative (cortical activation) or positive (cortical de-activation) shift in the DC-EEG signal. A single session can contain hundreds of trials.

In the 1990's most applications focused on reduction of seizures, but later (Heinrich et al, 2004) applications for attention training were added as well.

This user guide focuses on use of SCP with NeXus and BioTrace+. If you wish to learn more about the applications of SCP neurofeedback, please refer to the professional literature.

2. Using SCP equipment

For SCP the following equipment is required:

- NeXus-10 or NeXus-32.
- SCP Sensor
- EXG Ground TP
- Ag/AgCl sintered electrodes
- Nuprep
- Electrogel or Ten20
- Cap
- Earclips
- Adhesive Ag/AgCl electrodes

For SCP a special sensor, the SCP Sensor, is required. This is a two-channel EEG cable which uses touch-proof EEG connectors. 1 single connection is used as the active positive (RED) electrode for both channels and 2 separate electrodes are used as negative reference electrodes. (BLACK).

Besides the SCP Sensor the EXG Ground TP required, for referencing the system. The SCP Sensor and Ground TP are used with high quality sintered Ag/AgCl electrodes.

SCP Sensor

EXG Ground TP

The SCP Sensor is connected to inputs A/B on the NeXus-10 and inputs 25/26 on the NeXus-32F. The EXG Ground TP is connected to the Gnd input.

NeXus-10 MKII

NeXus-32

The NeXus-4 does not support SCP training.

For EOG measurements the EXG Sensor is used, with standard adhesive ECG/EMG electrodes.

EXG Sensor

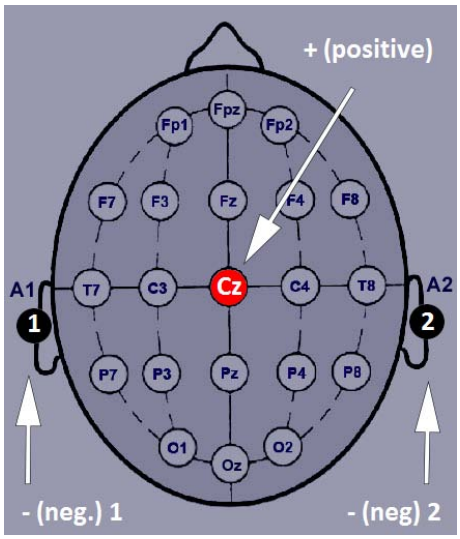
The EXG Sensor is connected to inputs C/D on the NeXus-10 and inputs 27/28 on the NeXus-32. Use the first channel (1) for measuring the vertical EOG. (VEOG).

Placing electrodes

Use sintered Ag/AgCl electrodes, because they offer the best qualities in terms of signal quality and stability for DC-EEG.

The NeXus SCP Sensor is placed with sintered electrodes on the head, with the red electrode on Cz, the black electrode (marked with 1) on the left earlobe or mastoid, and the black electrode (marked with 2) on the right earlobe or mastoid.

SCP Sensor with EEG Minicap



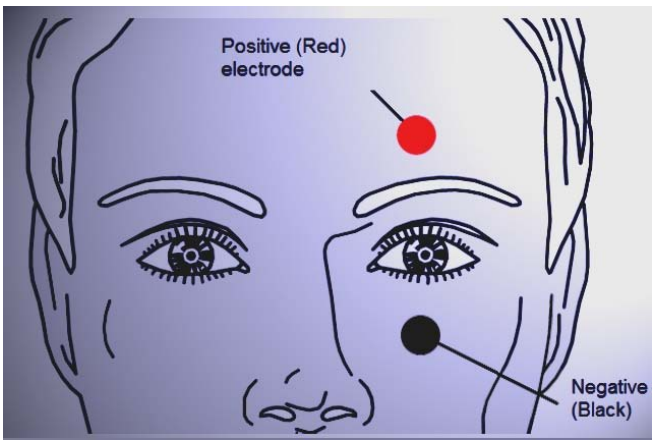
Electrode placement

The ground may be placed anywhere in the head/face or in the neck/shoulder area.

Placing the VEOG electrodes

Clean the skin gently and carefully around the eyes with NuPrep or a similar product. Use self-adhesive ECG/sEMG electrodes based on Ag/AgCl. Please notice that the skin below the eyes can be very sensitive. Please be careful when placing and removing EOG electrodes. Instead of self adhesive electrodes, sintered electrodes could be used as well

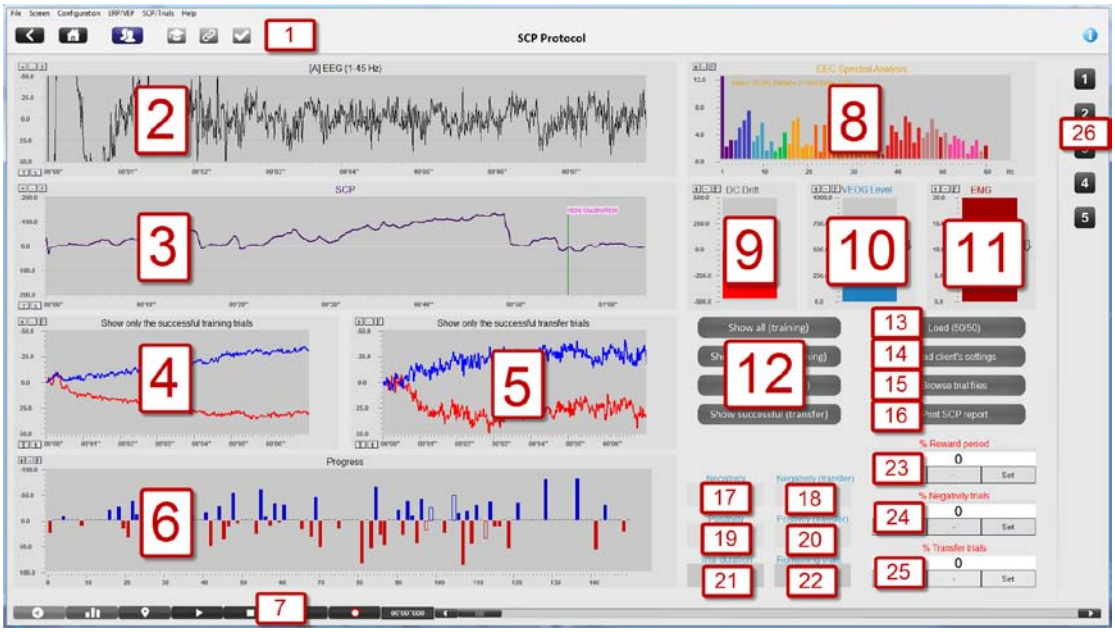
Polarity: note that the red(positive) electrode should always be above the eye and the black (negative) electrode should be below the eye, as in the picture below.



3. Using the SCP protocol

The SCP protocol consists of automated series of positive and negative trials called 'Runs'. A run can consist of any number of trials. The default SCP protocol in the software (50% negative, 50% positive) consists of 3 runs, each consisting of 30 trials. In this protocolevery run will therefore effectively show 15 negative trials, and 15 positive trials.
The SCP protocol has a number of possible settings, which will be covered later on.

Note: a dual monitor setup is highly recommended.



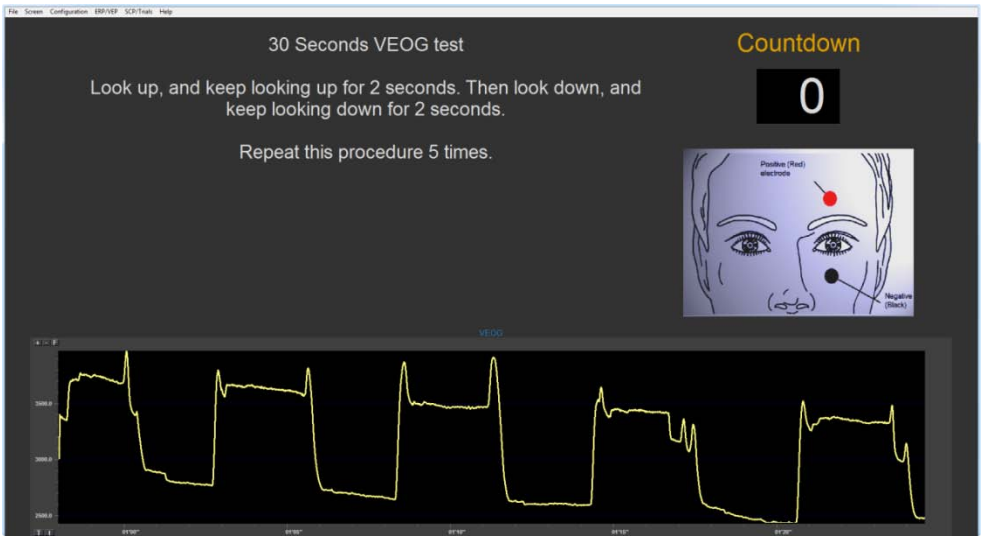
Explanation of screen objects

#	Screen object	Explanation
1.	Navigation bar	Screen navigation bar (more information can be found in the software manual)
2.	Raw signal:	EEG raw signal (1-45Hz).
3.	SCP signal	The SCP training signal. The signal is baseline-corrected, which will set the signal go back to zero (0) µV at the start of every trial. This way the feedback will always start from a neutral position at the start of every trial.
4.	Trend graph training	The inter-session trend of all **training** trials (positive and negative)
5.	Trend graph transfer	The inter-session trend of all **transfer** trials (positive and negative)
6.	Histogram training progress	All trials of the current session. The full colored blue bars represent negativity training trials; the hollow blue bars represent negativity transfer trials. The full colored red bars represent the positivity training trials; the hollow red bars represent positivity transfer trials. The grey bars on the zero-line represent any failed trial. (whether it be negativity or positivity, training or

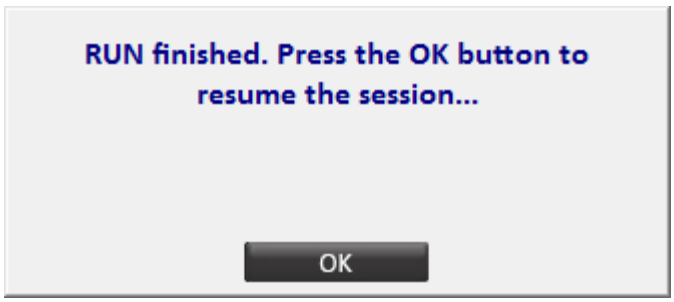
#	Screen object	Explanation
		transfer)
7.	Session control bar	Session control bar (more information can be found in the software manual)
8.	Frequency spectrum	Frequency spectrum of the raw EEG
9.	Bargraph DC drift	Amount of DC drift.
10.	Bargraph VEOG amplitude	VEOG amplitude.
11.	Bargraph EMG amplitude	EMG amplitude.
12.	Buttons to choose trend display	These buttons allow you to change the data that is displayed in the training and transfer trend graphs.
13.	Load 50-50	This button will load the default 50% negative, 50% Positive SCP protocol. This protocol consists of 3 runs of each 30 trials. No transfer trials are included and failed trials are repeated 1x.
14.	Load client's settings	The protocol file used for the client the previous session will automatically be loaded.
15.	Browse trial files	Browse (custom) created SCP protocol trial files,
16.	Print SCP report	Directly print an SCP report or an SCP trend report
17.	Negativity training %Success	Percentage of succeeded negativity training trials during the session.
18.	Negativity transfer %Success	Percentage of succeeded negativity transfer trials
19.	Positivity training %Success	Percentage of succeeded positivity training trials
20.	Positivity transfer %Success	The percentage of succeeded positivity transfer trials during the session.
21.	Trial duration	Time for every trial
22.	Remaining trials	Number of trials remaining in current run. The value will automatically adjust itself if a failed trial is repeated.
23.	% reward period	Set reward time window (in percentage) . Use the + and – buttons or by entering a value manually. Click "Set" to confirm.
24.	% negativity trials	Change the ratio of negativity/positivity trials during a session by changing the percentage of negativity trials. Use the + and – or enter a value manually. Click "Set" to confirm.
25.	% transfer trials	Change the ratio of training/transfer trials during a session by changing the percentage of negativity trials. Use the + and –or enter a value manually. Click "Set" to confirm.
26.	Client training set 1 – 5	Change client training screens during the session.

Take the following steps to record an SCP session

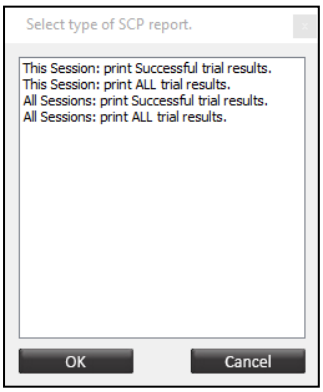
- Before starting, make sure the client sits comfortably facing the screen. Connect all sensors as described in the previous chapter.
- Start the SCP protocol by loading the SCP protocol screen. (see above)Go to the Signal Library, SCP, and select the SCP Protocol screen.
- Switch on the NeXus and start a new recording (#7). Use 'Signal Check' to check signal quality (#1)
- After checking signal 1, 2 and VEOG are good enough to proceed, start the automated SCP protocol by clicking 'Load 50-50' (#13). This will start the standard SCP protocol.
- The protocol will automatically start with an (VEOG) eye movement calibration. The client is instructed to look up and down 5 times for the duration of two seconds.- Please note that if the VEOG calibration is of insufficient quality the software will request to repeat the procedure.



- After successfully running the eye movement calibration, or disregarding it (not advised), the protocol will continue automatically. The first run of 30 trials will commence.
  Note: the default protocol setting is to repeat a failed trial 1 time. This means every run can consist of a maximum of 60 trials.
- Once a run is finished, the protocol will pause, which will allow the client to take a break. When ready to commence the next run, do so by continuing the session. This procedure of 'run' and 'pause' will be repeated until the last run has finished



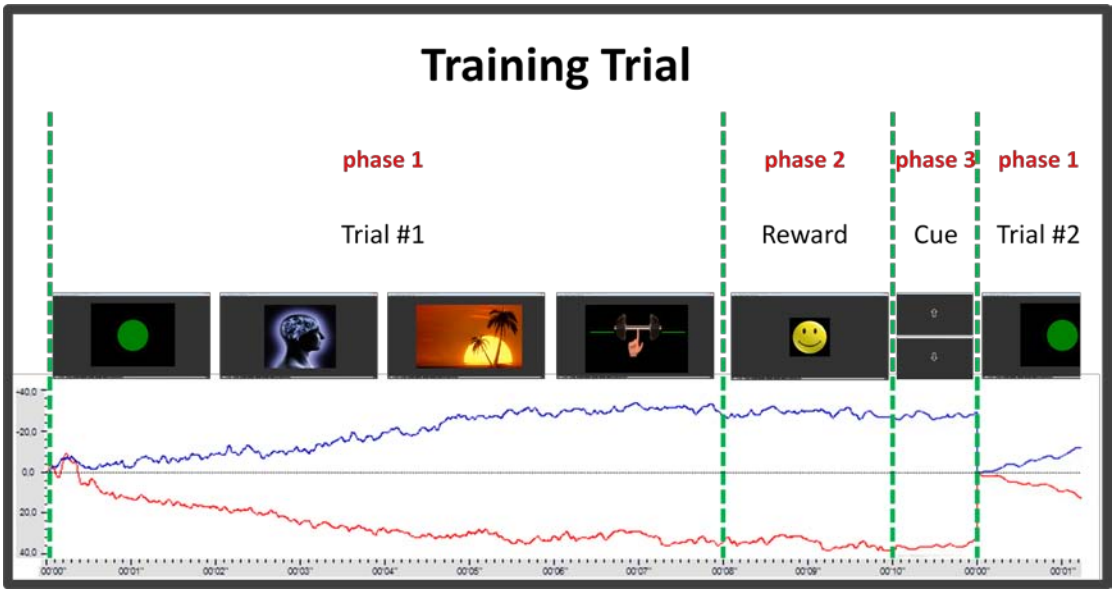
- After the last run has finished, the session will automatically be stopped, and a session description can be entered.
- A window will appear where you can select the type of SCP report you would like to generate. (more information on this in chapter 4)



Training trials

The SCP training trials consist of 3 phases.

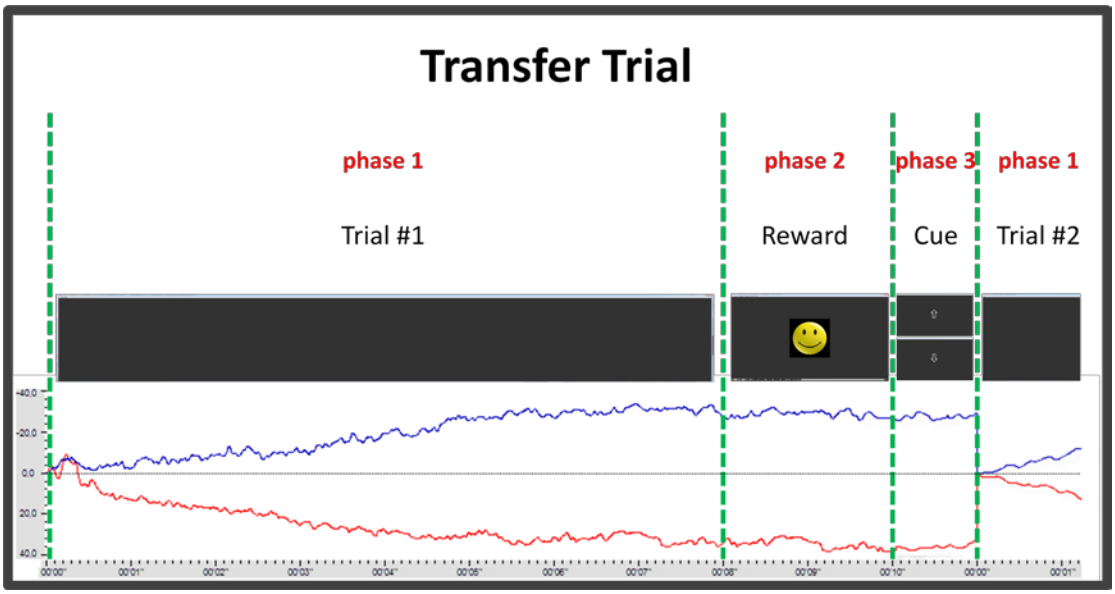
- **Phase 1**: (default: 8 seconds) A feedback screen is shown. The therapist can change the type of feedback screen in between trials by pressing the client training set buttons. (see page 8)
- **Phase 2**: (default: 2 seconds) Depending on whether or not a trial was successful, a reward screen is shown.
- **Phase 3**: (default: 0,5 second) A cue screen is shown that prepares the patient for the next trial (Arrow up for negativity, arrow down for positivity). At the end of this phase, the signal is baseline corrected for the next trial. (the signal will immediately return to zero, as seen below at the end of phase 3)



Transfer trials

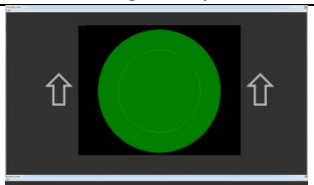
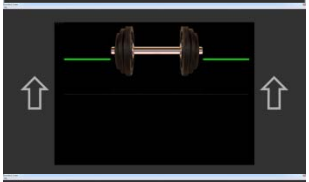
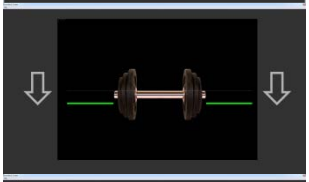
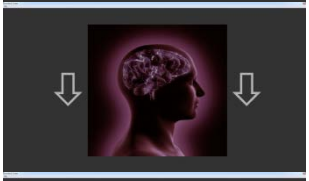
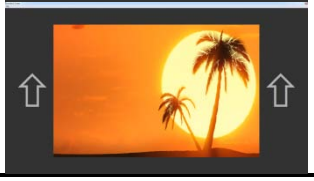
The SCP transfer trials consist of 3 phases.

- **Phase 1**: (default: 8 seconds) A blank feedback screen is shown.
- **Phase 2**: (default: 2 seconds) Depending on whether or not a trial was successful, a reward screen is shown.
- **Phase 3**: (default: 0,5 second) A cue screen is shown that prepares the patient for the next trial (Arrow up for negativity, arrow down for positivity). At the end of this phase, the signal is baseline corrected for the next trial. (the signal will immediately return to zero, as seen below at the end of phase 3)



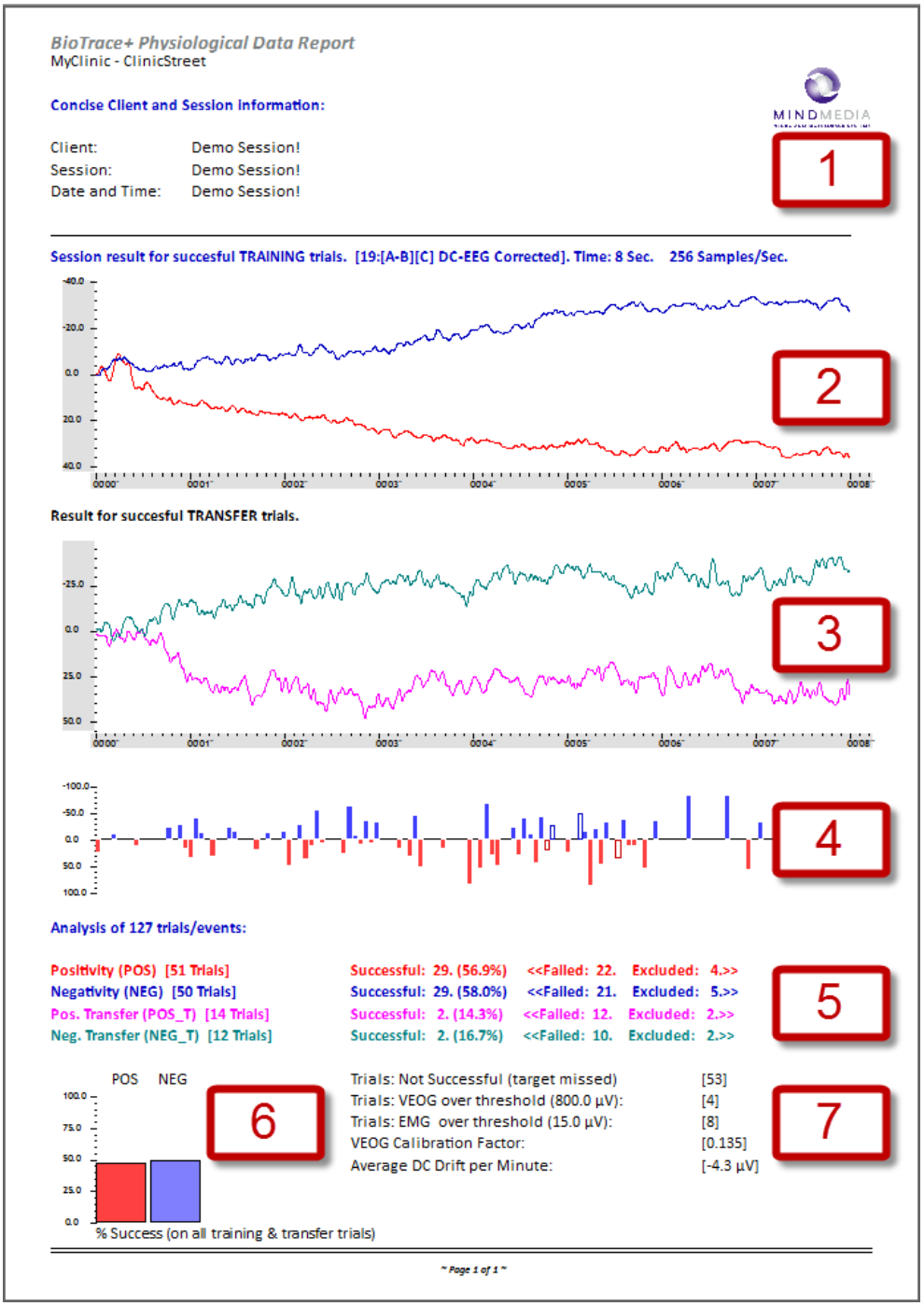
SCP client screens

The SCP protocol offers various client training screens, also including screens where instead of vertically moving objects (which may enhance VEOG artifacts) expanding objects like circles are used, which are less likely to induce vertical EOG activity and thus EOG artifacts. Below you will see the goal for the various client feedback screen-sets. For instance, moving a dumbbell up for negativity reward, and slowly lowering it for positivity.

Client screenset	*Negativity*	*Postivity*
#1 – Circle zoomer		
#2 – Dumbbell		
#3 – Flower		
#4 – Focus		
#5 – Sunrise		

4. SCP Report

The SCP protocol offers an averaged SCP response report for a single session and a trend report for multiple sessions. For both the single session- as for the trend session-report, an option is offered to include failed trials.

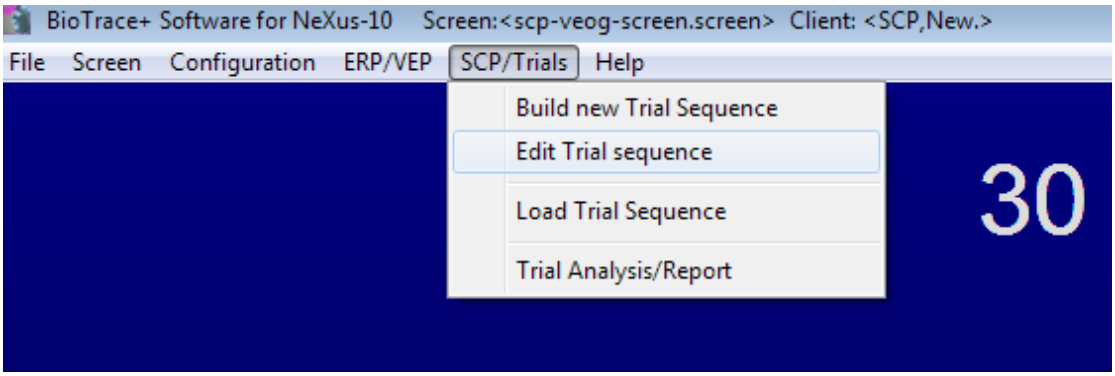


In this example you can see a total of 127 trials were analyzed (#5). This protocol consisted of positivity and negativity training trials, and positivity and negativity transfer trials, with a slightly higher success percentage in negativity trials (#6). As can be seen in the report (#5) there were a total of 51 positivity training trials, of which 29 successful, 22 failed and 4 excluded (more information in #7). The same output is generated for positivity transfer and negativity training and transfer trials.

#	Explanation
1.	Client and session information
2.	Averaged training trials plot
3.	Averaged transfer trials plot
4.	Histogram plot of all training- and transfer trials. Both successful and failed trials
5.	Trial analysis; Amount of successful-, failed-, excluded-, and type of trials. The trials are color coded: Red: Positivity Training Blue: Negativity Training Pink: Positivity Transfer Green: Negativity Transfer
6.	Percentage of success on all training and transfer trials for positivity and negativity
7.	Detailed information on failed and excluded trials.

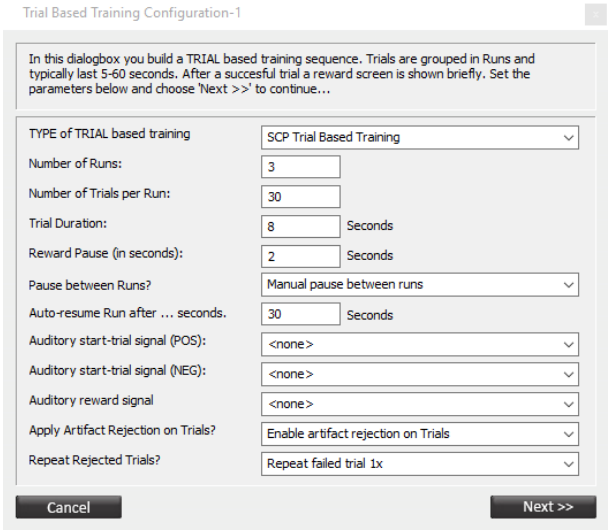
5. SCP protocol configuration

The SCP Trial File editor allows for creating custom SCP trial protocols, based on existing trial (Edit Trial sequence) files or creating fully new trial files (Build new Trial sequence) Trial files are made up out of various settings. These settings define how many negativity and positivity trials are generated, how long these trials take, the reward criteria, which screens are shown, artifact criteria, and many more settings.



All settings for this set of trials (organized in runs) can be saved under a unique file name for re-use in future sessions.

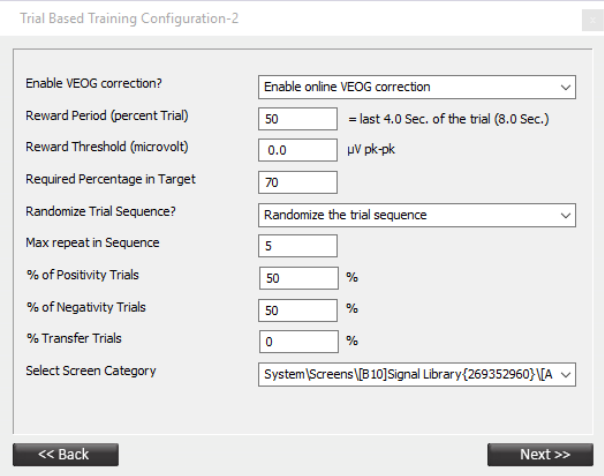
Trial editor configuration 1



Setting	Explanation
Type of trial based training	Currently only offers SCP trial based training.
Number of runs	Amount of runs per protocol
Number of trials per run	Amount of trials for every run
Trial Duration	Duration of each trial, without reward period.
Reward Pause (in seconds)	Duration of the reward period.
Pause between Runs?	Set whether the protocol should pause between every run or proceed without pause.
Auto-resume run after … seconds	If an automatic pause moment is set, the software can be set to continue after an x

Setting	Explanation
	amount of seconds.
Auditory start-trial signal (pos)	Set an auditory file to play at the start of every positivity trial
Auditory start-trial signal (neg)	Set an auditory file to play at the start of every negativity trial
Auditory reward signal	Set an auditory file to play if the reward criteria are met.
Apply artifact rejection on trials	Set whether a trial should be rejected if during that trial, the artifact criteria are not met.
Repeat rejected trials	Number of time times a trial should be repeated if this trial is failed, or disable this feature entirely.

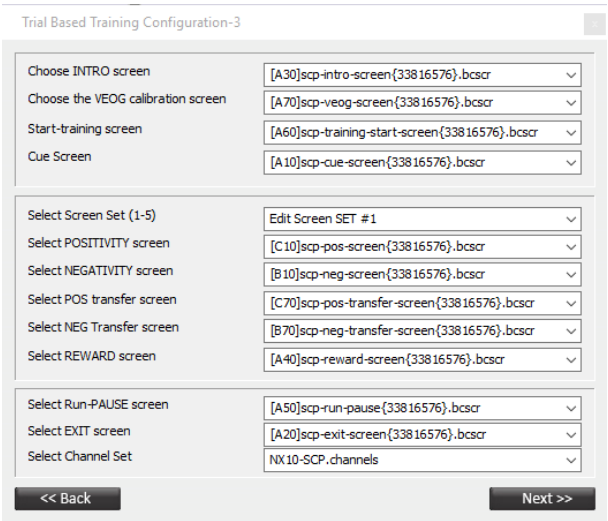
Trial editor configuration 2



Setting	Explanation
Enable VEOG correction	Enable or disable the VEOG artifact correction. This setting will correct the SCP signal for VEOG data.
Reward period (percent trial)	Percentage of data that will be used to define the reward criteria. i.e. Setting 100% will use the entire length of the trial. Setting 10% will only use the last 10% of the trial, making it more difficult to achieve a reward.
Reward threshold (microvolt)	By default, the baseline value of 0 µV is set. Setting a higher value will make it more difficult to achieve a reward. The setting is universal for both negativity as well as positivity training.
Reward percentage in target	The percentage of time the SCP signal must be above (negativity) or below (positivity) the threshold in order to meet the reward criteria. For example, keeping the SCP value above threshold for 10% of the time is easier to achieve than keeping the value above the threshold for 90% of the time.

Setting	Explanation
Randomize trial sequence	Set whether the trials should be randomized or not.
Max repeat in sequence	Maximum amount of negative or postivity trials in sequence. By default, the software only allows negativity or positivity to be repeated 5 times in a row.
% of positivity trials	Percentage of positivity trials, and consequently the remaining percentage of negativity trials.
% of negativity trials	Percentage of negativity trials, and consequently the remaining percentage of positivity trials.
% of transfer trials	Percentage of transfer trials included in the training. If set to zero (0), the protocol will only run training trials. The value set here goes for both negativity and positivity trials.
Select screen category	Screen folder where the SCP screens for the protocols are saved.

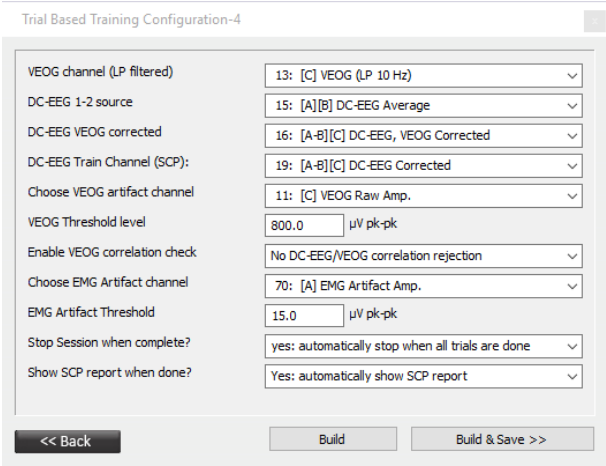
Trial editor configuration 3



Setting	Explanation
Choose Intro screen	Screen to be shown as intro screen
Choose the VEOG calibration screen	Screen shown as VEOG calibration screen
Start-training screen	Screen shown at the start of the SCP training protocol
Cue screen	Screen shown as cue screen. **This cue screen will show the client which task (positivity or negativity) is about to follow.**
Select screen set (1-5)	Client screen set to be edited. For every set, you can set a positivity-, negativity-, positivity transfer-, negativity transfer- and reward-screen.
Select positivity screen	Screen set for positivity trial
Select negativity screen	Screen set for negativity trail
Select pos transfer screen	Screen set for positivity transfer screen

Setting	Explanation
Select neg transfer screen	Screen set for negativity transfer screen
Select reward screen	Reward screen per screen set
Select run-pause screen	Screen shown during pause between runs
Select exit-screen	Exit screen shown
Select channel set	Channelset used

Trial editor configuration 4

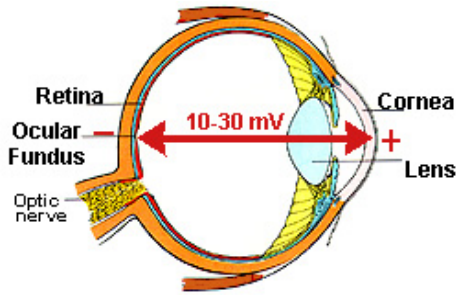


Setting	Explanation
VEOG channel (LP filtered)	Channel used as low-pass filtered VEOG channel.
DC-EEG 1-2 source	Channel used as averaged DC-EEG input.
DC-EEG VEOG corrected	Channel used as VEOG corrected DC-EEG signal.
DC-EEG train channel (SCP)	Channel used as SCP training channel.
Choose VEOG artifact channel	Channel is used as VEOG artifact channel.
VEOG threshold level	Threshold for VEOG (amplitude) artifact
Enable VEOG correlation check	Disable/Enable VEOG correlation as artifact-criteria.
Choose EMG artifact channel	Channel used as EMG artifact channel.
EMG artifact threshold	Threshold for EMG (amplitude) artifact
Stop session when complete	Select whether the software should stop the session automatically after the SCP trial protocol has finished.
Show SCP report when done	Select whether the software should show a report after the SCP trial protocol has finished and the data is saved successfully.

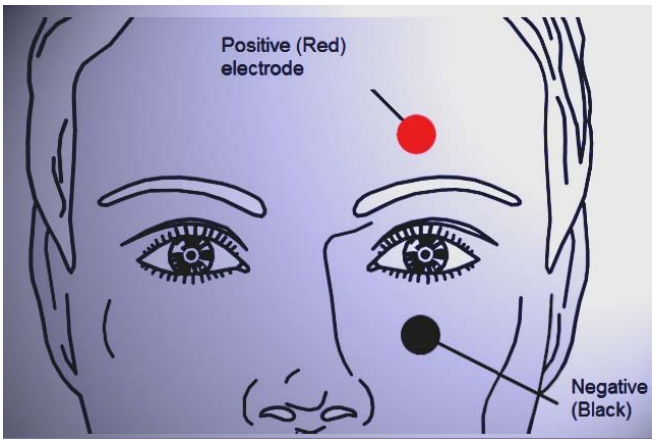
Appendix 1. Eye artifacts and eye movement correction

Because (slow) eye movement and the corresponding electrical signals (EOG, electro oculography) can cause strong artifacts when doing SCP training, EOG measurement is required when doing SCP training in order to do EOG artifact correction and/or rejection.

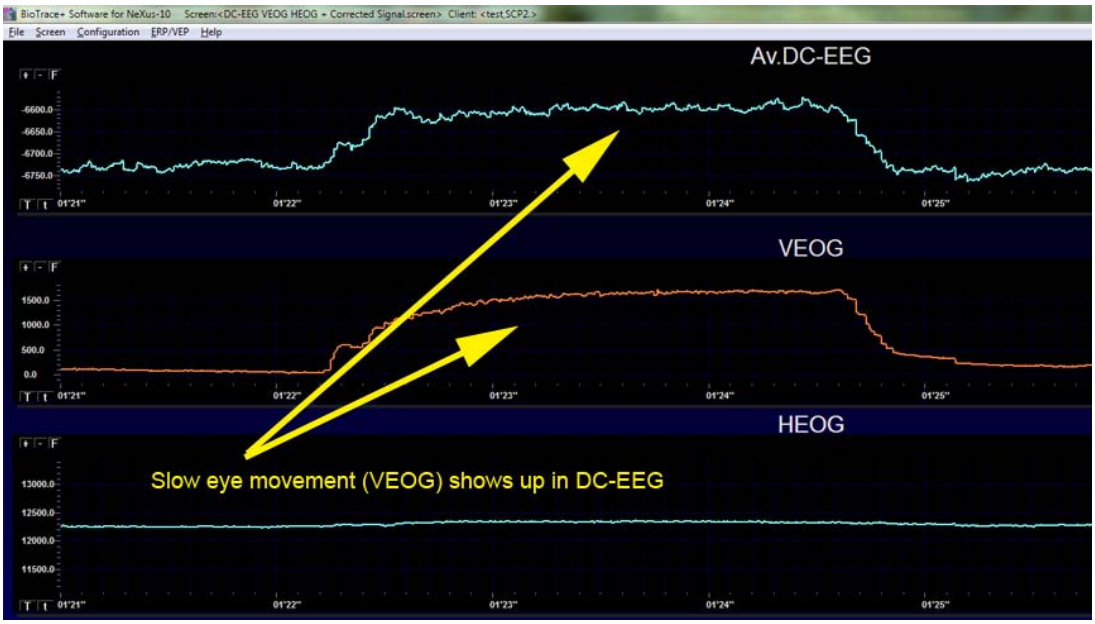
The eye acts as an electrical dipole in which the anterior pole (cornea) is positive and the posterior pole (retina) is negative. The recorded EOG potential represents a measure of the position (rotation angle) of the eye, in both the horizontal and vertical axis.



Slow eye movements in the vertical axis, in other words looking up and down, can generate vertical shifts in the EEG signal measured on the scalp. In other words DC-EEG potential can be simulated by slow eye movements. VEOG levels measured around the eye, can reach significantly higher levels than regular shift of the slow cortical potentials.

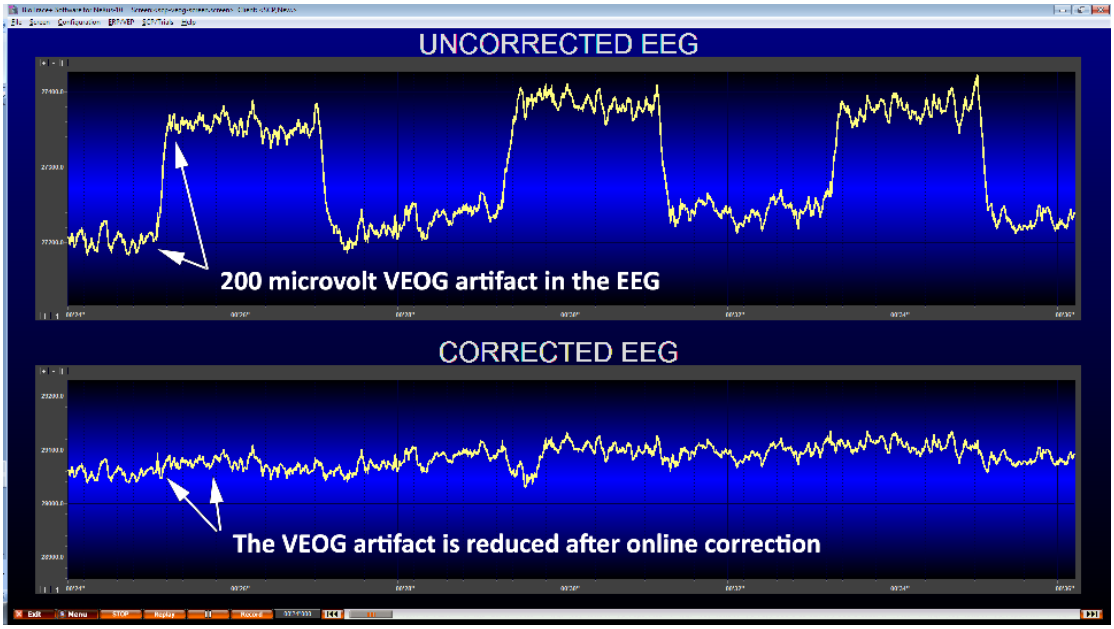


It is evident that this effect must be reduced to a minimum. The picture below illustrates how strong vertical eye movement creates significant VEOG signals, (2nd graph in orange) while HEOG signals (3rd graph in blue) remain virtually unchanged. It also shows how in the Average DC-EEG (1st graph) the VEOG movement can be observed. Most of these slow EEG amplitudes now consists of EOG artifact.



In the picture below the effects of eye artifacts on the EEG is illustrated. Note the slow vertical eye movements and eye blinks. The eye movements are causing a slow DC-shift of about 100 microvolt peak-peak in about 8 seconds. Eye blinks have less impact on the SCP, as these are usually faster frequencies. As a first measure, one would like to prevent EOG movement. Nevertheless, total prevention of eye movement is almost impossible. Therefore, a second measure is the online VEOG correction performed by BioTrace+. In order to be able to perform VEOG correction, a correction factor is determined each time SCP training is started by performing a short calibration. The client is requested to make a series of vertical eye movements at the start of the session.

Below an EEG session before and after EOG correction is shown.

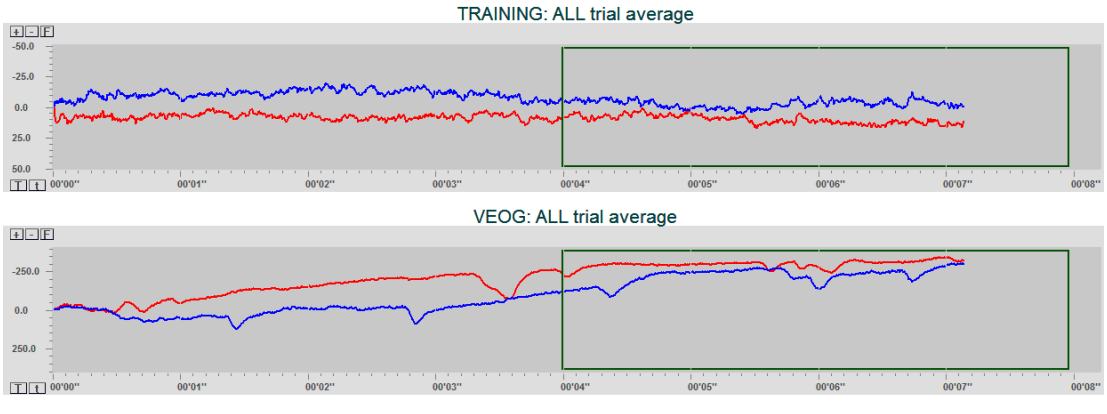


Please note that the VEOG subtraction, does not work like a digital filter, it does not cause changes in the phase of the AC-EEG waveform.

VEOG and DC-EEG correlation

Since the influence of VEOG is substantial, an optional feature is a VEOG and DC-EEG correlation. This means that for every trial the waveform of the VEOG is compared to the corrected DC-EEG for the entire duration of the trial (typically 6-10 seconds) When the correlation is too high this can be set as an extra condition to reject trials.

The averaged VEOG signals for all trials can be looked at and compared to the actual training signal. The picture below shows an example of this. The "Training all trial average" graph shows that on average in the last 3 seconds the blue line (negativity) is above the red line (positivity).

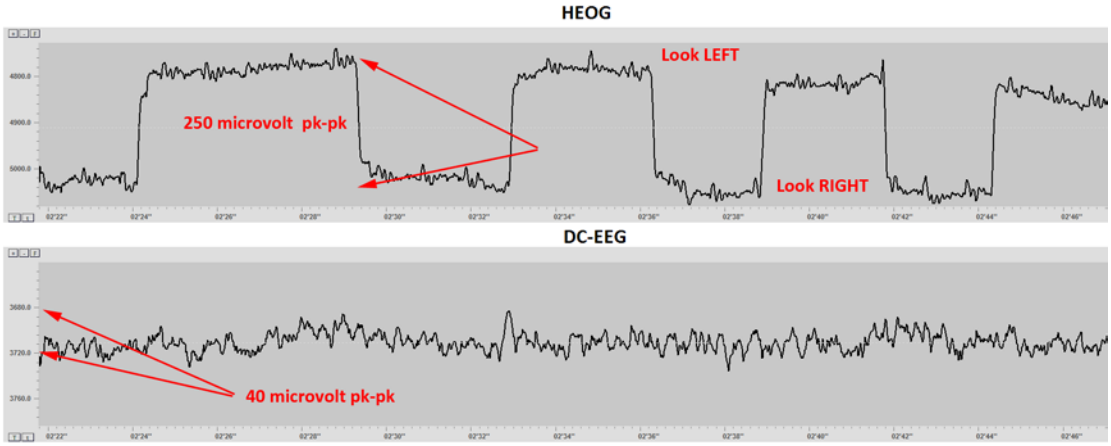


For the VEOG signals, it turns out that in this example the results are more like the reverse. (VEOG red signal is above the VEOG blue signal). This means that in this case there is no positive correlation between the VEOG and the DC-EEG and a SCP result because of VEOG is very unlikely.

Horizontal EOG

In the SCP protocol, the Cz electrodes are connected to M1/M2 or A1/A2 using a dual differential amplifier design. (Using two EEG channels instead of one). This type of montage cancels out the EOG in the horizontal axis (between the eyes) and significantly reduces all HEOG artifacts. Therefore no horizontal EOG electrodes need to be placed.

Below picture illustrates the absence of the effect of HEOG movements in a regular set-up.



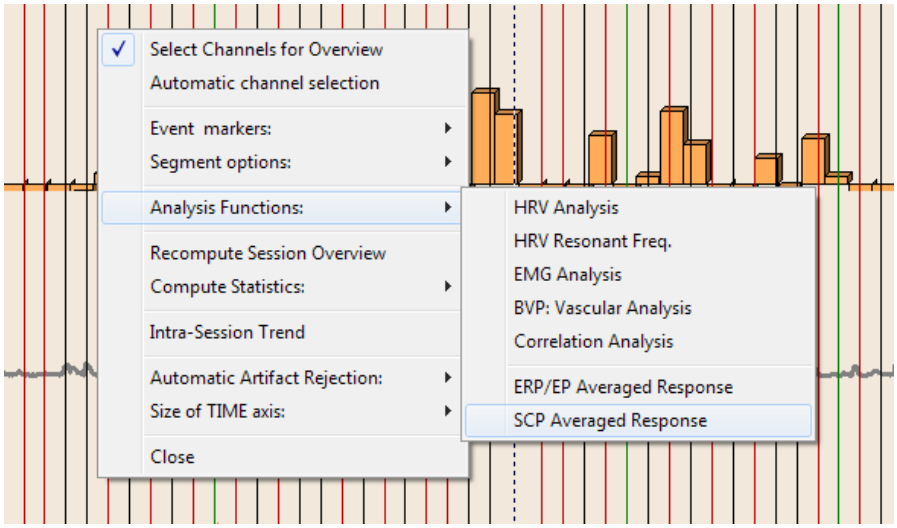
For this subject the HEOG level is about 250 microvolts pk-pk. The peak levels represent looking to the left and the bottom levels represent looking to the right. Note that the raw DC-EEG signal does not show any **effects** of the HEOG signals

Acceptance criteria for trials and multi-level EOG checking

Each trial is thoroughly checked to see whether it is successful or not, and has to pass a number of criteria.

1) Check if the VEOG activity (measured as the RMS VEOG amplitude over 2 seconds) is less than a certain threshold. If the absolute VEOG activity is too high, the trial Is rejected
2) Check the EMG artifact level. If too high the trial is rejected
3) Check how much percent of the EEG training signal is actually in the target area (below/above) the threshold. If the percentage is too low, the trial is rejected.

Note: each of these ONLINE corrections/rejections are also applied in the offline analysis when the offline **SCP averaged response** is computed.



Appendix 2. DC-Drift

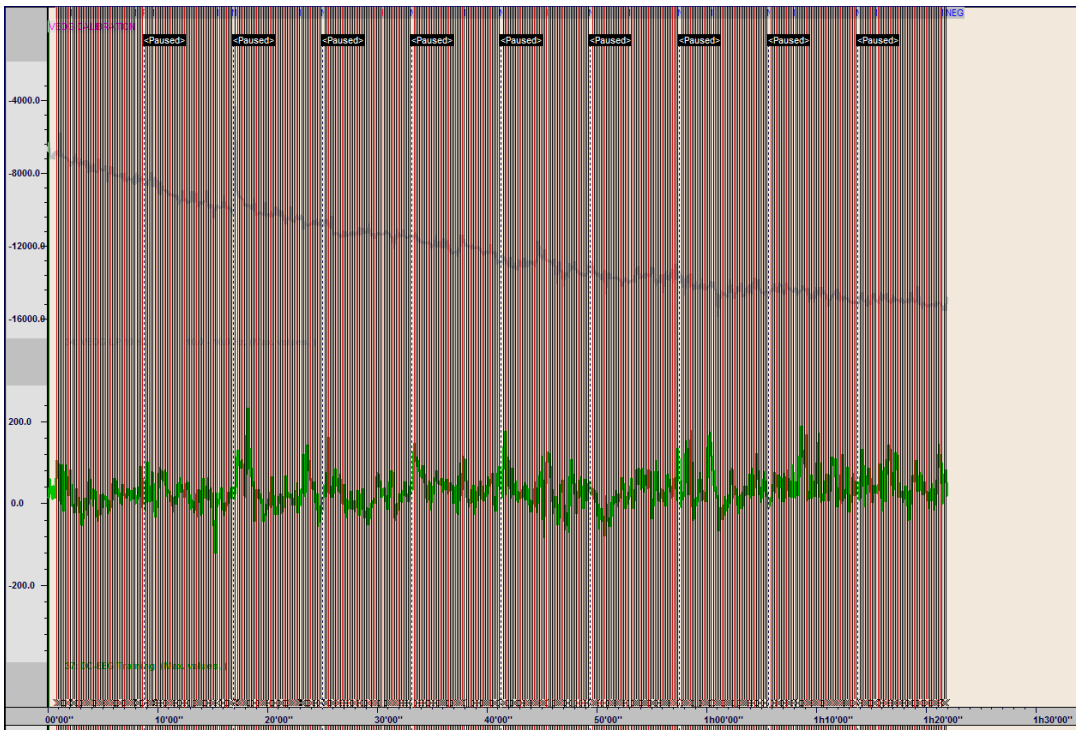
DC-drift is not caused by the electronics of the NeXus amplifiers. Rather, it is a so called "electrode polarization"or "battery effect" generated by the electro-chemical exchange of charged ions between the skin, the conducting materials (gels) and the electrode materials. This polarization between skin/gel/electrode can take a long time to stabilize, so it must be minimized. The best ways to do this are:

1) Use Ag/AgCl sintered electrodes
2) Preparation:
    a. Extensive and careful skin preparation/abrasion of each electrode site
    b. Use chloride based based conductive gels/paste like Ten20 and ECI-Gel
3) Ideally some time is taken between having connected the electrodes and the actual measurements for stabiliziation of the DC-EEG signal

These are no norms of acceptable levels of DC-drift in the DC-EEG for SCP training. Simply said, less is better In order to have a low as possible DC-drift the following measures are recommended.

Please consider the following session which serves as a typical example:

In this session of 80 minutes, there is a dc-drift on the raw signal (at the top) which starts at a level of around -7000 microvolts (peak-peak) and decreases steadily towards the end to a level of around -15000 microvolts peak-peak. Over 80 minutes = 4800 seconds, this is a drift level of 1.5 microvolt per second.



Software based DC-drift correction:
Note that the second signal (green) at the bottom is the corrected EEG signal, which is not only corrected for VEOG but also corrected for dc-drift. The drift in the corrected signal is close to zero and therefore seems absent.

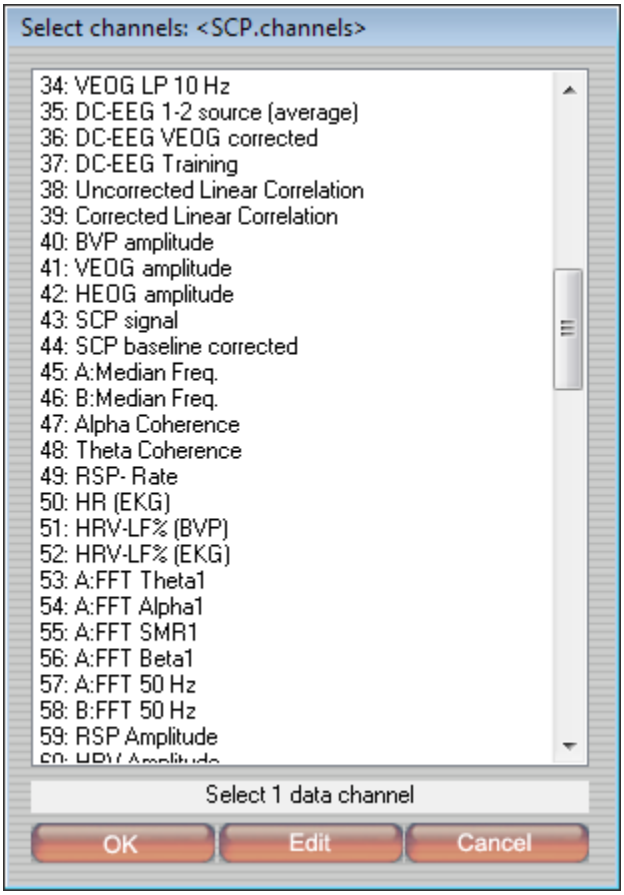
In order to reduce the dc-drift (caused by electrode polarization) a moving average DC-level computed over 30 seconds is subtracted from the average EEG level. Please note that this improves the visible drift effects, but it does not and cannot correct the skewing effect that the actual dc drift has on the SCP training results in the direction of the drift. In other words, if the actual electrode drift is in the positive direction, the positivity training will be more easy, and when the actual electrode drift is in the negative direction, the negativity training will be more easy. The software can't discriminate between the signal becoming more positive/negative as a result of dc-drift or as a result of actual brain activity.

Appendix 3. Signal flow and data processing

The BioTrace+ processes the raw DC-EEG signals coming from the true DC amplifiers in a 24 bit format through a series of steps. The following example is given for the NeXus-10.

1) Record DC-EEG from input A (256 samples/sec).
2) Read the raw DC-EEG from input B (256 samples/sec).
3) Take the average of 1 and 2
4) Record the raw VEOG signal from input C.
5) Compute the VEOG amplitude as the RMS over 2 seconds.
6) Subtract the VEOG signal by a factor X from the average DC-EEG. The factor X is automatically computed during calibration
7) Compute a 30 second moving average over the average DC-EEG.
8) Subtract the moving average from the average DC-EEG and store the result as the DC-EEG training signal.
9) Compute the online correlation of the DC-EEG and the VEOG for each trial. (pearson product moment)
10) Compute the EMG artifact level

The SCP protocol uses a special data channel set which has all these computations and data processing implemented. You can verify each step by looking at the definition of the channels.



Appendix 4. User definition of the trial parameters & reward criteria.

1) Number of runs
2) Number of trials per run
3) The trial duration
4) The reward duration (after each trial)
5) The pause between runs
6) The auto or manual resume after a pause.
7) Auditory start signals for POS and NEG types
8) Auditory reward signals
9) The application of artifact rejection for trials
10) The repeat factor of rejected trials
11) Enabling or disabling the online VEOG correction
12) The size of the reward period within the trial
13) The reward threshold (above/below target level)
14) The required percentage of EEG samples within the target area. (POS/NEG)
15) The randomization of the trial sequence
16) The maximum repeat factor or similar training trials
17) The percentage of positivity trials
18) The percentage of negativity trials
19) The percentage of transfer trials
20) The screen category/directory to use
21) The individual screens to use for introduction, VEOG calibration, start instructions, cue screen, POS and NEG training, transfer and reward.
22) The run pause and exit screens.
23) The user can define up to 5 screen sets which can be switched by the keys F1-F5 during training for more variation in audio visual feedback.
24) The data processing and channel set.
25) The channels to use for data processing (VEOG, DC-EEG training, etc.)
26) The absolute VEOG amplitude level for rejection
27) The criteria for online VEOG correlation check
28) The EMG artifact settings
29) The EMG artifact threshold
30) The automatic stopping/ending/reporting at the end of the session.