

RECORDING AN ELECTROENCEPHALOGRAPH

page22

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http://biology.clc.uc.edu/fankhauser/Labs/Anatomy_&_Physiology/A&P202/Nervous_System_Physiology/EEG_protocol.htm

NOTE: We now have a new computer based EEG apparatus. This protocol is subject to change. Be sure to indicate any difficulties or changes in protocol in your notebook.

RECORDING AN EEG:

Using BSL (Bio Student Lab), Version 3.6.7(what is number of new software?)

- 1) Turn on computer, login: USERBL (a faculty member will log in for you)
- 2) Plug electrode lead into **Channel 1**.
- 2) Open software: **BSL Lessons** icon
- 3) Choose Lesson: click on **LO4 (2nd EEG item)**
- 4) **Create your file:** Type your file name: *LASTNAME_X.month.yr* where X = first name initial. ENTER
- 5) **Connect electrodes:** (They MUST have excellent contact with skin for success.)
 - a) If skin is moist or oily, wipe skin at electrode placement sites with 95% EtOH, dry well.
 - b) Clip lead harness securely to belt or clothing by its spring clip.
 - c) Place a small drop of electrolyte gel on adhesive electrodes, attach the three leads and secure in place with headbands:
 - a) Red and white electrodes: press against the skin three inches apart on either side of the occipital bone. (Part the hair so you see the scalp.)
 - b) Press the black electrode on the inside R wrist, secure in place with doubled headband.
- 6) **TO CALIBRATE:** Darken the room, lie the subject down with relaxed, easy breathing. Click CALIBRATE. Double check electrode position, click OK. Look for even, flat line, no spikes. If it contains erratic "static," recheck to secure electrode placement (more gel?) and repeat calibration.
- 7) After calibration has been successfully completed, proceed to next step.
- 8) With complete **silence of observers**, have subject **lie completely still with no facial movements**.
- 9) **TO RECORD:** With subject's eyes open, click on RECORD. You should see high frequency (15-60 Hz) low amplitude (5-10 mV) **beta waves**, typical of the alert brain.
- 10) After 15 seconds with eyes open, have subject close eyes closed for 15 QUIET seconds (RELAXED...). You should see occasional low frequency (8-10 Hz) high amplitude (50 mV) **alpha waves** (if the subject is truly relaxed).
- 11) After 15 seconds in deep meditation, have subject open eyes for 15 more seconds.
- 12) After 60 seconds total, click button **STOP**.
- 13) If the tracing is satisfactory (look especially for alpha waves when eyes closed), click on **DONE**.
- 14) It asks if you want to stop recording, click **YES**.
- 15) A new menu appears, highlight **ANALYZE CURRENT DATA FILE** to select, click **OK**.
- 16) Click **SHOW GRIDS** button in menubar.
- 17) Click **arrow** button in lower right side of screen
- 18) Left click the space below the graph (next to "seconds").
- 19) A menu appears, enter time in the seconds you wish to print for upper scale range (usually total of 60 sec), set **time division lines at 2** seconds, click OK.
- 20) Left click voltage space to the right of the graph, set **voltage range -50 to +50 mvolts**, set voltage **division lines at 10 mV**, click OK.
- 21) Click **FILE**, select **PRINT**.
- 22) Select **PRINT GRAPH**, click OK.
- 23) The Print Options menu appears. Enter "4" in the plots per page space.
- 24) Click on **PRINT**.
- 25) Collect printed tracing from the Lab printer. Label when eyes were open or closed, and indicate beta and alpha EEG waves. At the print conditions described in #16-20, 1 interval equals 2 seconds. Mark the one second intervals below the graph (ignore the printed numbers, they are erroneous...) Indicate how many hertz (cycles per second). Xerox at 80% and mount in notebook.