

Galvanic Skin Response (GSR) User Guide
Biopac Systems, Inc.
 Lucas Center 3T3 (P165)

I. Introduction

Galvanic Skin Resistance (GSR) uses a low frequency alternating current through two fingers to measure electrical resistance.

The resistance alters in response to sympathetically generated perspiration on the skin, and is a psychophysiological marker that may reflect emotion and anxiety.

It may be monitored in the magnet as described below.

II. Electrodes

Electrodes:
 Biopac Systems, Inc. (EL508) Radiotranslucent, pre-gelled electrodes, 1-1/2 inch tape, Carbon snap

Electrodes may be purchased from:
 Biopac Systems, Inc., 42 Aero Camino, Goleta, CA, 805-685-0066, www.biopac.com

BIOPAC SYSTEMS, INC.

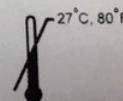
EL508

RADIOTRANSLUCENT, PRE-GELLED ELECTRODES
 1-1/2 Inch Tape, Carbon Snap

Quantity: **5**

Manufactured For
 BIOPAC Systems, Inc.
 42 Aero Camino
 Goleta, CA 93117
 Tel: 805-685-0066
 Fax: 805-685-0067
www.biopac.com

LOT 228828
 09-2016



III. GSR computer & equipment in the control room



3T3 Physio Computer



3T3 Biopac Equipment

IV. Placement of the electrodes

Recommended placement is on the 2nd ('index') and 4th ('ring') fingers, palmar side, middle phalanges.

Only use electrodes that have been sealed in the original pouch (see page 1).

Using electrodes from a pouch that has been opened for any extended period of time results in less than optimum contact as the gel can dry up when exposed to air.

GSE clips & cables are very fragile so please treat them gently especially when moving subject in and out of the magnet bore. Please do not step or pull on the cables.

Before applying electrodes, clean the palmar side of the fingers with an alcohol wipe and dry thoroughly with a towel.

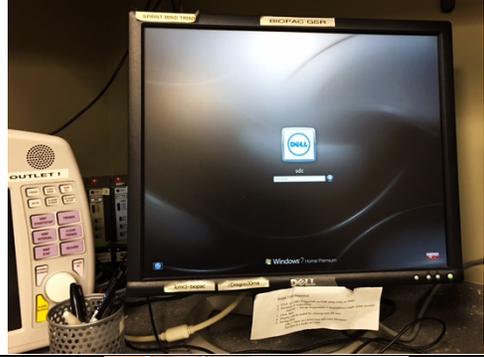
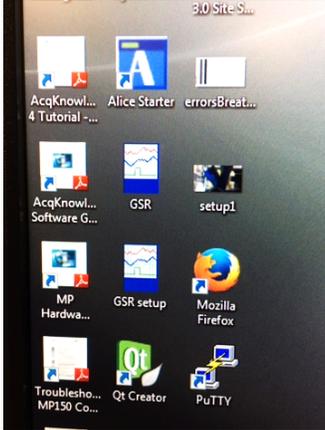
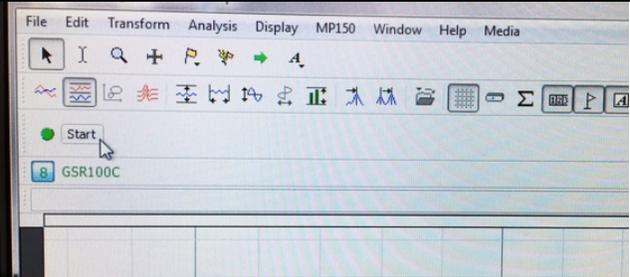
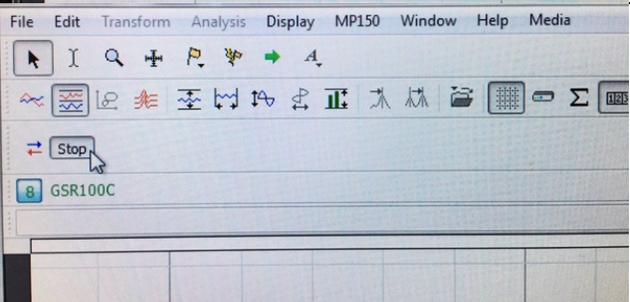
Subject must keep the hand still to avoid artifacts due to motion.

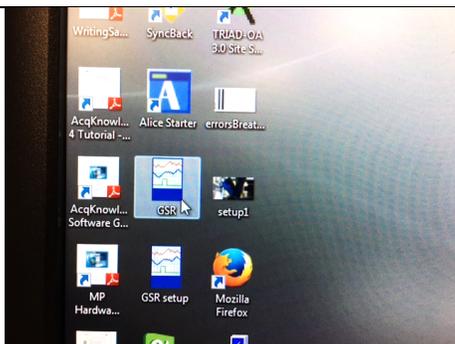
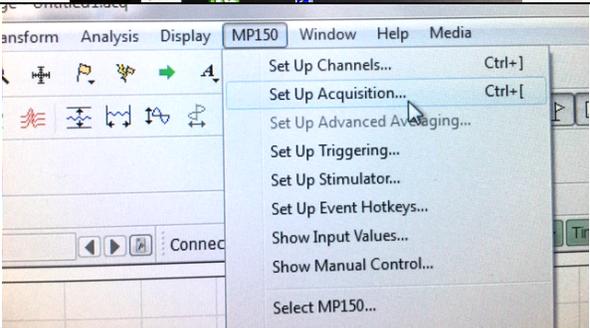
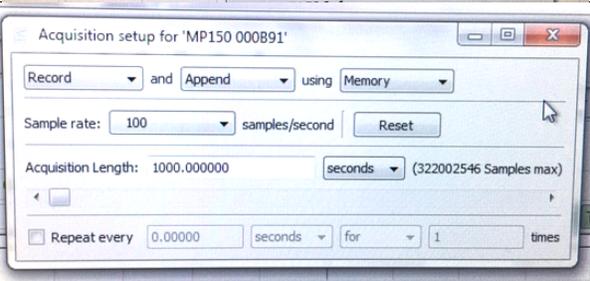
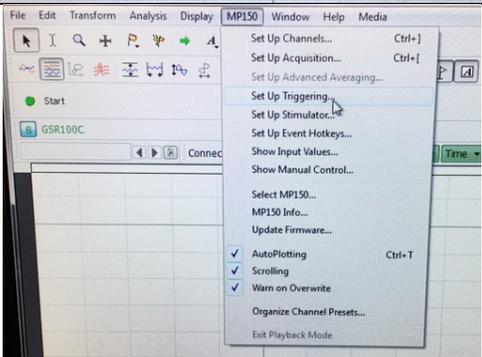
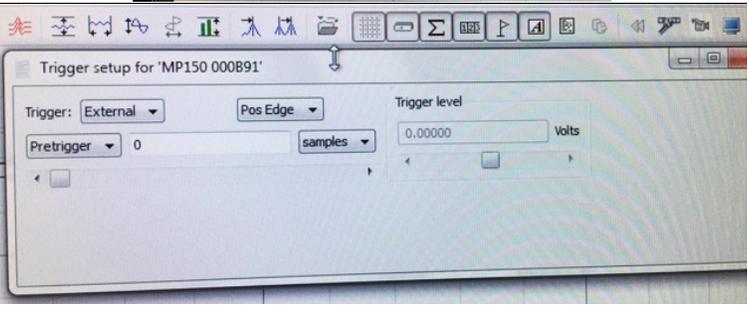
If an exam lasts more than 3 hours, you may need to repeat this procedure to apply new electrodes as the gel can dry out rendering a less than optimum contact and results.

Hands of the scan subjects must be separated (not touching) and the cables must exit directly out of the magnet bore, without loops, and without touching the subject's body or the magnet bore walls.



V. GSR program at computer in the 3T3 control room

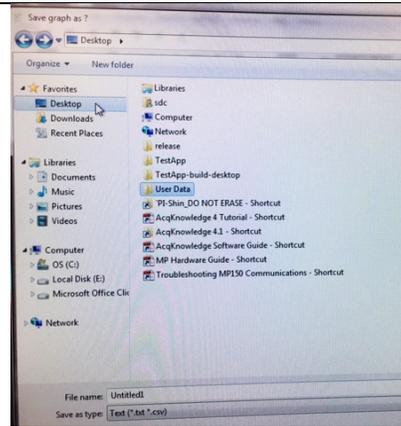
<p>3T3 Physio computer is located to the right of the ePrime computer.</p>	
<p>To start program, select Either “GSR” (program can be triggered externally with scanner) or “GSR setup” (manual start) on Desktop. Settings can be modified after selecting “GSR” or “GSR setup”.</p>	
<p>Select “GSR setup” for manually controlled data acquisition.</p>	
<p>To start recording data, select “Start” in upper left corner.</p>	
<p>To stop recording, select “Stop” in upper left corner.</p>	

<p>To record data using trigger from scanner, select “GSR” on Desktop.</p>	
<p>To modify acquisition parameters, select “MP150” pull down menu. Select “Set Up Acquisition”.</p>	
<p>Enter acquisition parameters in this menu. Acquisition length in seconds.</p>	
<p>To set up triggering from scanner, select “Set Up Triggering” from “MP150” pull down menu.</p>	
<p>Enter triggering parameters in this menu. By selecting “Trigger: External” the data acquisition will begin automatically when the scan begins.</p>	

To save recorded data, select “Save As” from “File” pull down menu.

Save as type: Text (*.txt*.csv)

Select “Desktop”, then “Users”, then the appropriate folder for your lab or research study.



Obtain Matlab code to read GSR txt files. Go to <http://rsl.stanford.edu/glover/fmriutil/> and get readgsr20.m.

This program resamples at a specified rate in seconds/sample, e.g. TR, and writes an output text file. This allows The user to create a regressor that may be used in a GLM or other statistical test.

Index of /glover/fmriutil

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
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linux/	22-May-2012 14:43	-	
osx_intel/	20-Jan-2011 12:59	-	
readgsr20.m	08-Jul-2008 11:37	1.0K	
sprlio_instructions.pdf	11-Jul-2008 10:02	128K	
sprlio_postprocessing.pdf	21-Jun-2010 12:55	68K	

VI. Storing the GSR cables in the 3T2 magnet room – VERY IMPORTANT!

At the end of the exam, carefully loop GSR cables, tie with a Velcro wrap and hang on the cable board.

