BIOPAC **Systems, Inc.**

Posted 10-12-04

#PS217 - Importing BSL Data Into Excel

This application note explains how to import **BSL** Journal data into **Microsoft**® **Excel** or other statistical analysis (spreadsheet) packages.
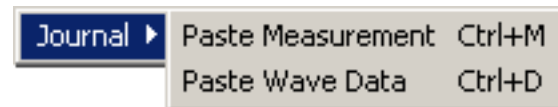
Storing BSL Data in the Journal

The Journal provides a very convenient way of saving data measurements and graph data prior to exporting them to **Excel**.

In the example above, the Mean and Maximum heart rate were taken at 2 second intervals and then pasted into the Journal.

The **Edit > Journal** sub-menu has two options: Paste Measurement and Paste Wave Data.

Both options paste data (whether measurements or raw data) directly into the journal in standard text file format rather than copying it to the clipboard.
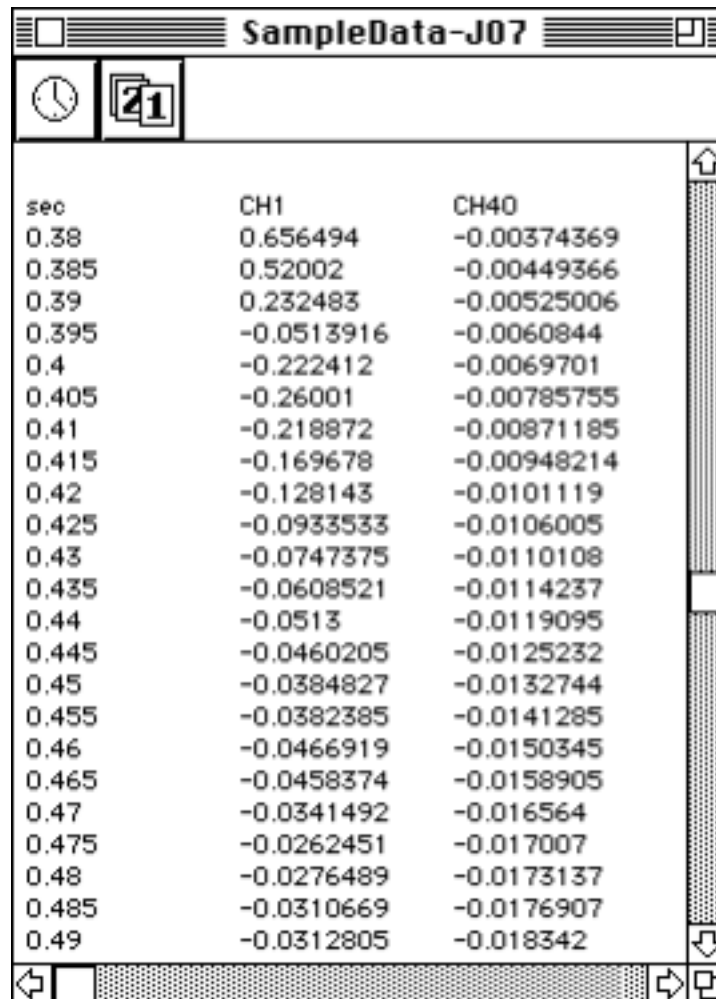
Paste Measurement

Pastes the measurements and values from all visible measurement windows into the Journal. Use **Journal Preferences** to set the number of measurement rows or the measurement precision.

- *Tip* For best results when pasting measurements into Excel, paste only the raw numbers into the Journal (deselect Measurement Name, Channel Number, and Units in the **File > Preferences > Journal** options).

Paste Wave Data

Converts each point in the selected area to a numeric value and pastes it into the Journal. Uses the selected area from all the channels--not just the selected channel. When two or more channels are being pasted, a tab delimiter is placed between the columns. Use **File > Save As > Options** to change to comma or space delimiters.

- *Tip* It's very easy to paste a lot of data into the Journal using this command. If you select one second of a wave that was sampled at 200 Hz, you will get 200 numbers written into the Journal. Hide channels and limit the selected area to minimize the amount of data.

SampleData-J07		
sec	CH1	CH40
0.38	0.656494	-0.00374369
0.385	0.52002	-0.00449366
0.39	0.232483	-0.00525006
0.395	-0.0513916	-0.0060844
0.4	-0.222412	-0.0069701
0.405	-0.26001	-0.00785755
0.41	-0.218872	-0.00871185
0.415	-0.169678	-0.00948214
0.42	-0.128143	-0.0101119
0.425	-0.0933533	-0.0106005
0.43	-0.0747375	-0.0110108
0.435	-0.0608521	-0.0114237
0.44	-0.0513	-0.0119095
0.445	-0.0460205	-0.0125232
0.45	-0.0384827	-0.0132744
0.455	-0.0382385	-0.0141285
0.46	-0.0466919	-0.0150345
0.465	-0.0458374	-0.0158905
0.47	-0.0341492	-0.016564
0.475	-0.0262451	-0.017007
0.48	-0.0276489	-0.0173137
0.485	-0.0310669	-0.0176907
0.49	-0.0312805	-0.018342

When you save a Journal file it is automatically saved in a text file format.

Importing BSL Data to Excel

Excel (and most other analysis packages) will open a text formatted file. **Excel** will place each measurement and description into individual cells. Follow the **Text Import Wizard** that is generated when you open the text file.

The **Text Import Wizard** will determine whether your file is in a delimited or fixed width

column format. To put data into individual cells for analysis, select

- **Delimited** - if the file was saved with only the measurement values (as there is only one data category to be formatted).
- **Fixed Width -** if the file includes Measurement Name, Channel Name, or Measurement Units.

The following screen shows the first of three **Text Import Wizard** stages:
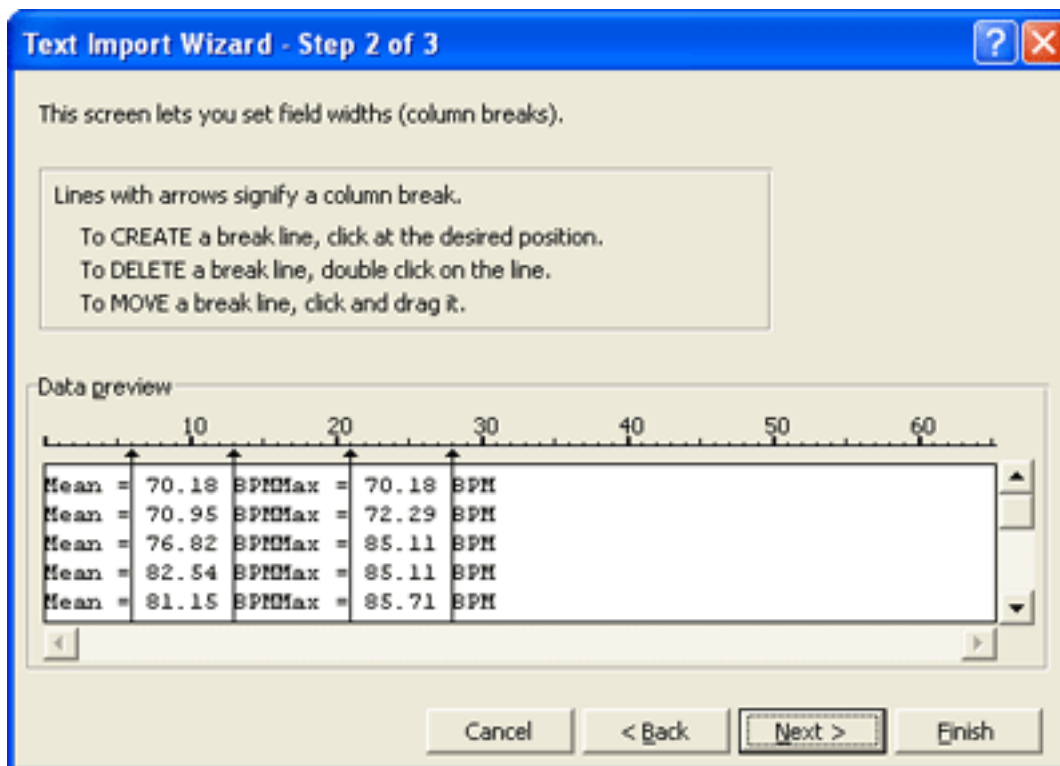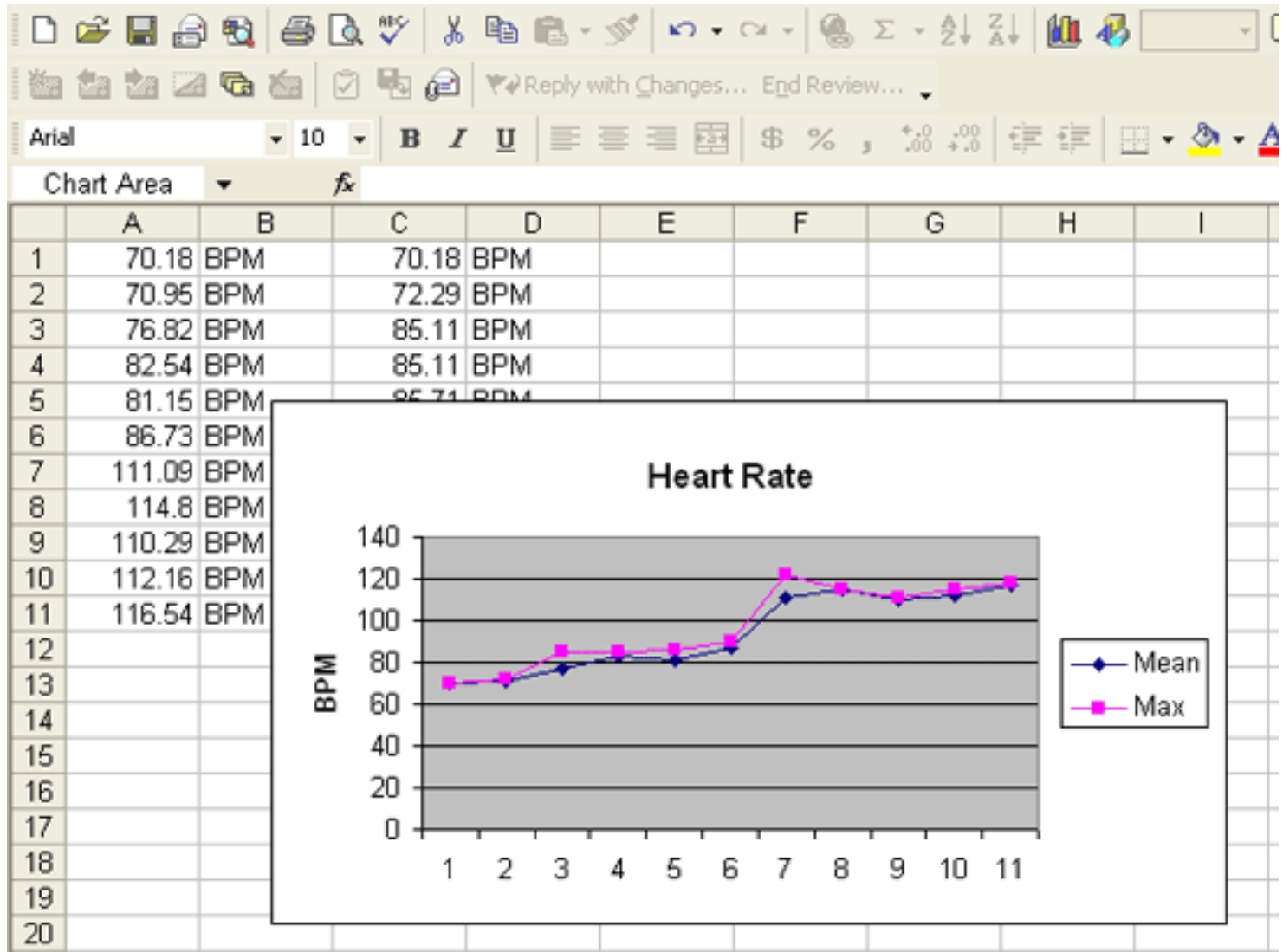

By selecting **Next**, the default for steps 1 through 3, **Excel** will automatically import your data into a row and column format. This allows you to further analyze, compare, and graph your results.

The following screen shows a Journal file imported using the fixed width column format with each value assigned to its own cell:

Arial   ▾ 10 ▾ B I U ≡ ≡ ≡ ▦ $ % , ‰ .00

A1   ▾   fx Mean =

	A	B	C	D	E	F	G
1	Mean =	70.18 BPM	Max =		70.18 BPM		
2	Mean =	70.95 BPM	Max =		72.29 BPM		
3	Mean =	76.82 BPM	Max =		85.11 BPM		
4	Mean =	82.54 BPM	Max =		85.11 BPM		
5	Mean =	81.15 BPM	Max =		85.71 BPM		

The following screen shows the Journal data plotted, summed, and charted:

Arial   ▾ 10 ▾ B I U ≡ ≡ ≡ ▦ $ % , ‰ .00

Chart Area   ▾   fx

	A	B	C	D	E	F	G	H	I
1	70.18 BPM		70.18 BPM						
2	70.95 BPM		72.29 BPM						
3	76.82 BPM		85.11 BPM						
4	82.54 BPM		85.11 BPM						
5	81.15 BPM		85.71 BPM						
6	86.73 BPM								
7	111.09 BPM								
8	114.8 BPM								
9	110.29 BPM								
10	112.16 BPM								
11	116.54 BPM								
12									
13									
14									
15									
16									
17									
18									
19									
20									

Heart Rate chart (BPM vs. sample 1–11) with Mean and Max series.

Another reporting option is to use the Edit > Clipboard > Copy Graph option to paste an image of the BSL *PRO* graph display into any program.
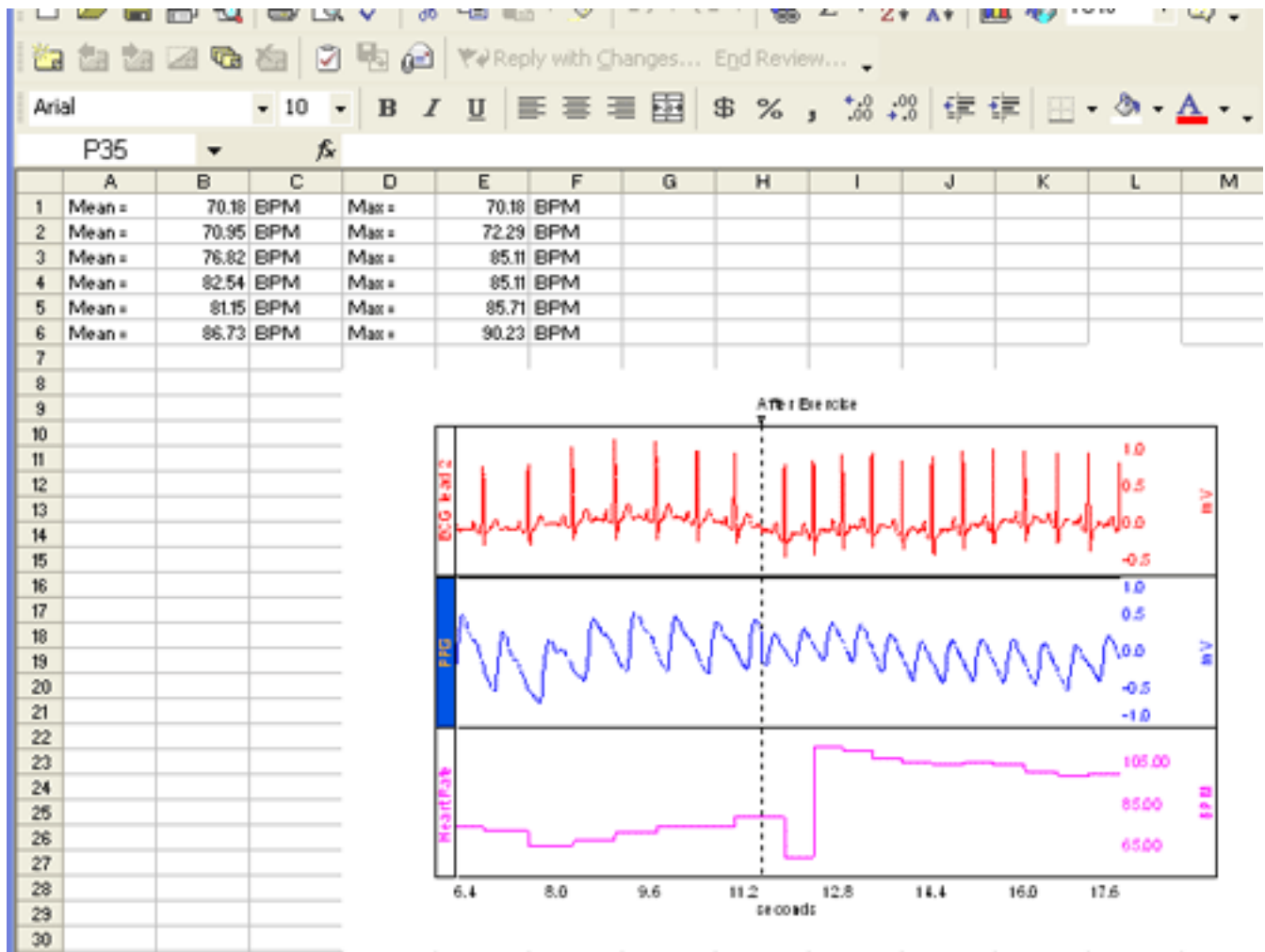
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