

**BioGraph Infiniti**  
**DynaMap Suite 3.0 for ProComp2**  
**March 2, 2006**

**SA7990D Ver 3.0**

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## Channel Sets

### **P2 2 Ch EMG Bi-Lateral Difference.chs**

- C. MyoScan- Pro 400
- D. MyoScan- Pro 400

Each channel is used to connect MyoScan-Pro sensor. The MyoScan-Pro sensor automatically converts SEMG signal to a root mean square (RMS) signal (an analog rectification is done inside the circuitry).

The logic to determine if the signals have a difference greater than 20% is the following:- e.g. between channel C and D.

$$(C > D + D \times 0.2 \text{ OR } C < D - D \times 0.2) \text{ OR } (D > C + C \times 0.2 \text{ OR } D < C - C \times 0.2)$$

To enable easy adjustment of the percentage difference all of the channels have been ganged together and converted into a real number. By changing the constant value of the channel labeled "Insert % Difference Value Here" from the default 20 to 30 the percentage used in all the channels will be changed to 30%.

This Boolean output is then converted to a float and optionally smoothed for use in an instrument. This smoothed output is used in all the screens supplied with this channel set.

An additional level of logic is added to the channel set to prevent small levels of environmental electronic noise from changing the value for the output. This logic looks at the level of the two signals and if it is below 2uV then it does not calculate the 20% difference, and the out put remains at 0 or the light off.

Note: Smoothing has been added to some of the digital and animated bar graphs to enhance the clinical feedback. Smoothing has not been added to the red indicator lights, this smoothing delay can lead to a slight miss match between the numbers seen and the illumination of the light.

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## **P2 2 Ch EMG.chs**

- C. MyoScan-Pro 400
- D. MyoScan-Pro 400

Each channel is used to connect MyoScan-Pro sensor. The MyoScan-Pro sensor automatically converts SEMG signal to a root mean square (RMS) signal (an analog rectification is done inside the circuitry). Maximum, Minimum, Mean, Standard Deviation, Variability are calculated.

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## P2 2 Ch Gonio.chs

- C. Goniometer
- D. Goniometer

Arrangement of Goniometer sensors inputs, processing for each channel as described above.

Note: -

Goniometer and Torsiometer are interchangeable in the software. Goniometer, Torsiometer and Force sensors are all fed through a linear transform equation that is accessible within the main application. The input max and min values are correlated to the desired and calibrated output values.

Sensors that are not connected at time of recording are automatically set to a raw input value of 1. If this channel is then processed through a linear transform virtual channel it may result in a constant value different from 1, and will display as such on the display screen.

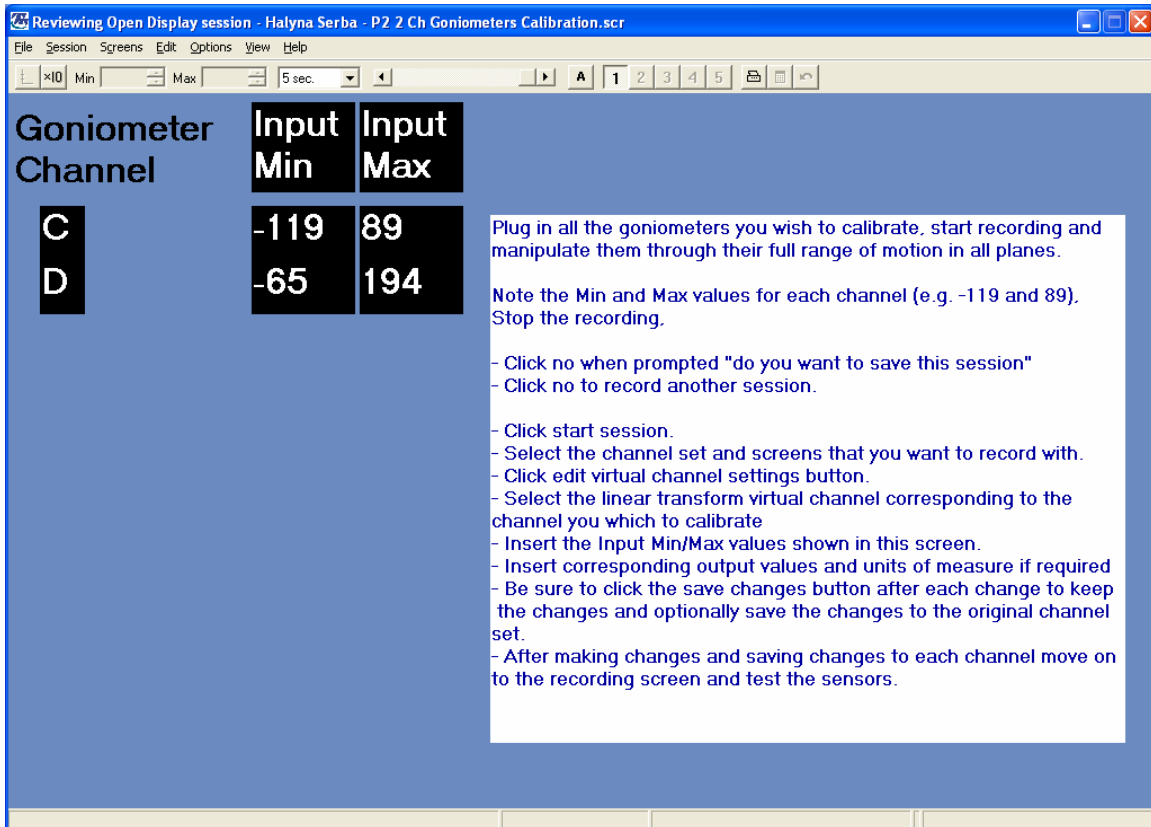
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## **P2 2 Ch Force.chs**

- C. Force
- D. Force

2 channels of Force measurement, the raw signal is passed through a linear transform to convert the raw engineering count to a recognizable true unit value. Various statistical values are then extracted from this output. Please note that if a channel isn't connected then its raw value is replaced with a constant of 1, depending on the settings for the linear transform it may display in the screens as a constant value other than 1.

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## P2 2 Ch Goniometers Calibration.scr

Channel Set: P2 2 Ch Gonio.chs

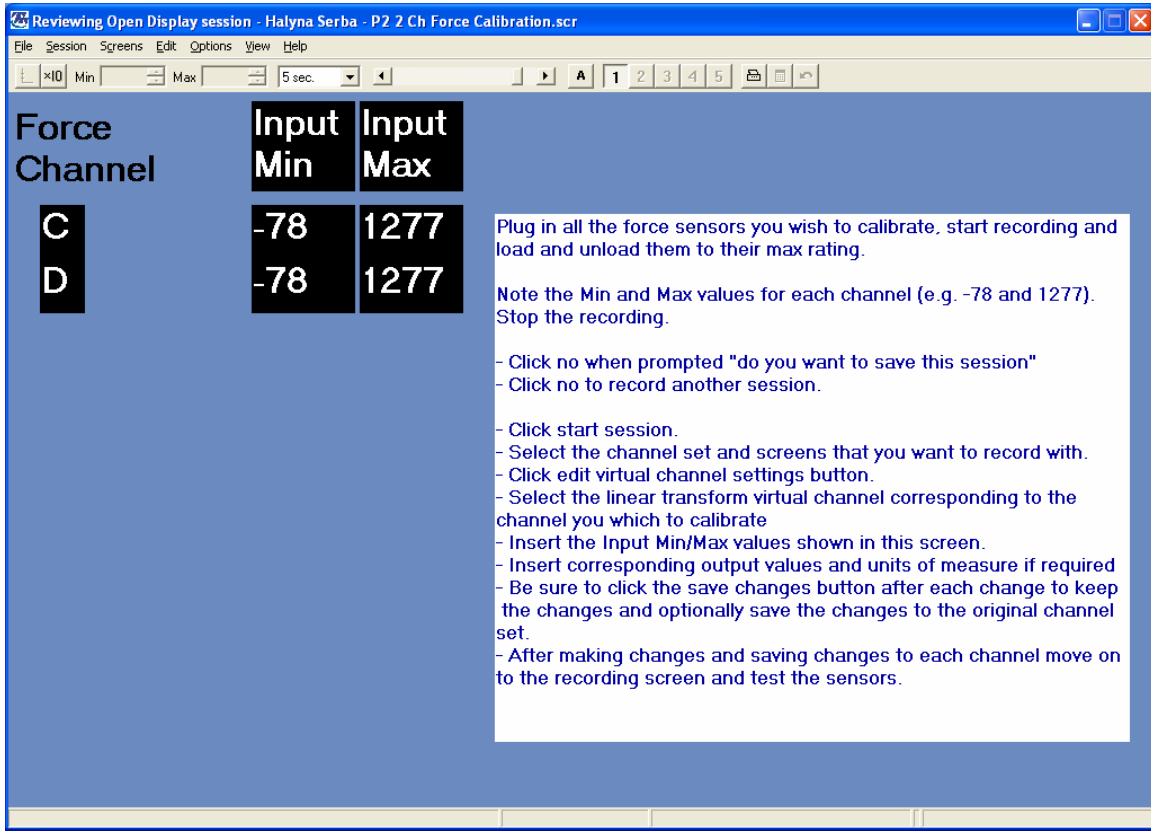
Category: Calibration

Description: 2 Ch Goniometers Calibration.

Screen intended for goniometer sensors calibration. To calibrate the sensors, connect the hardware and open the goniometer calibration screen then start a recording. Manipulate the goniometer to its maximum and minimum specified deflection. Record the max and min values. Stop the session and move to the channel set that is going to be used to record data, edit the virtual channel set and select the virtual channel relating to the axis that you are calibrating. Manually enter the input Min and Max values and the corresponding output min and max values. It is also possible to enter the units of measure which will appear in generated reports.

Note: -.A goniometer sensor converts its position to a raw value, as the position changes the value corresponding to that position changes with it. Most goniometers have a specified minimum and maximum deflection. This raw value can be transformed into a meaningful calibrated value in the software by using the linear transform virtual channel. This linear transform takes the minimum and maximum raw value and converts it to the min-max output values corresponding to the positions (e.g. -119 to 89 becomes 0 to 180 Degrees.)

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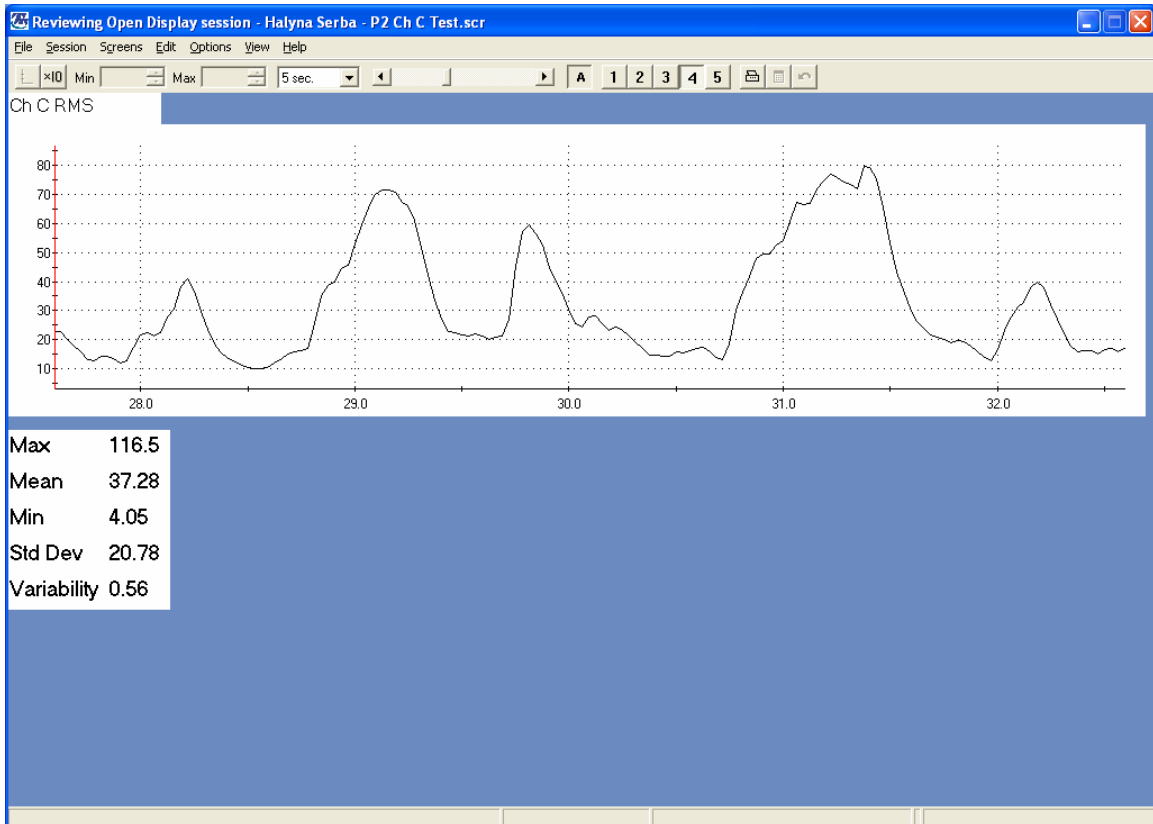
## P2 2 Ch Force Calibration.scr

Channel Set: P2 2 Ch Force.chs  
 Category: Calibration  
 Description: 2 Ch Force Calibration.

Screen intended for force sensors calibration. To calibrate the sensors, connect the hardware and open the Force calibration screen then start a recording. Apply a know load to the force sensor and record the loaded (max) and unloaded (min). Stop the session and move to the channel set that is going to be used to record data, edit the virtual channel set and select the virtual channel relating to the sensor that you are calibrating. Manually enter the input Min and Max values and the corresponding output min and max values of the known load. It is also possible to enter the units of measure which will appear in generated reports.

Note: - A force sensor converts the load applied to a raw value, as the load changes the value corresponding to that load changes with it. This raw value can be transformed into a meaningful calibrated value in the software by using the linear transform virtual channel. This linear transform takes the minimum and maximum raw value and converts it to the min-max output values corresponding to the positions (e.g. -78 to 1277 becomes 0 to 10 lbs).

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### **P2 Ch C Test.scr (also D)**

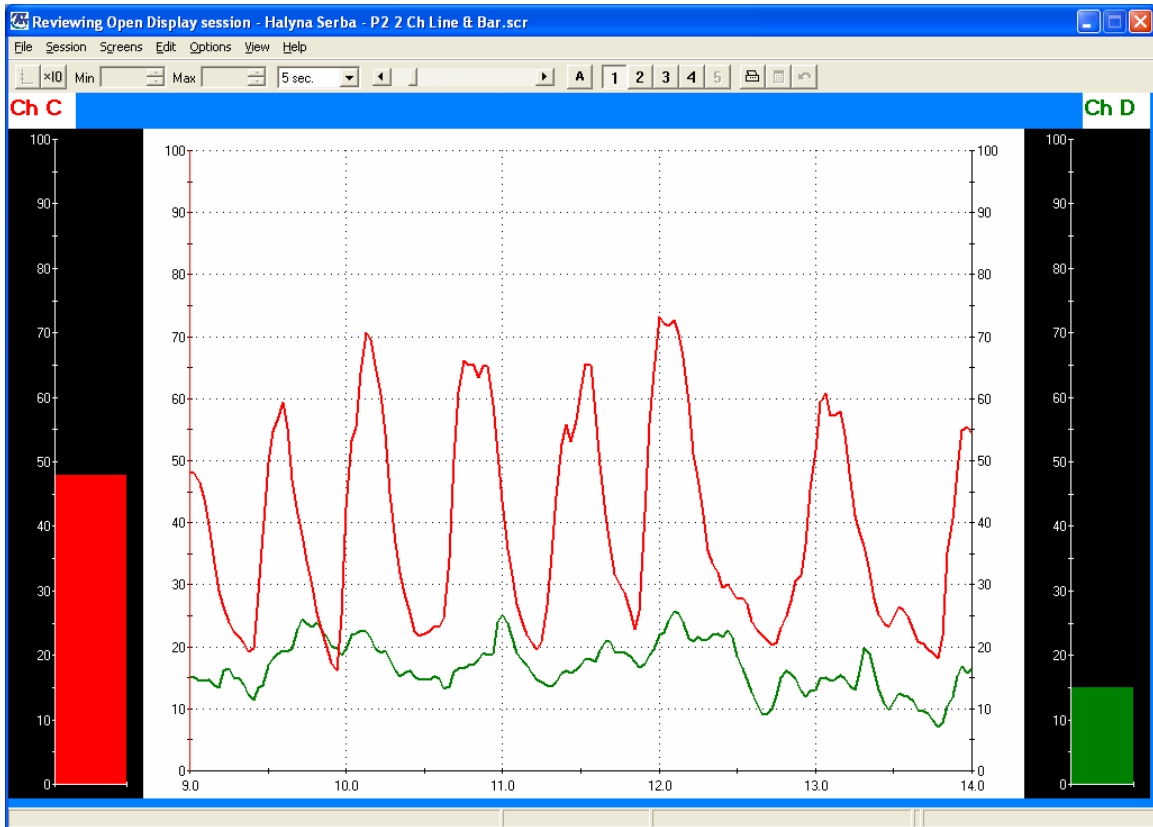
Channel Set: P2 2 Ch EMG.chs

Category: Review

Description: Test screen Ch C

A sample of information from the output of channel C. RMS line Graph, Max, Mean, Min, Std Deviation, Variability stats. This screen has been duplicated for the channel D.

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### **P2 2 Ch Line & Bar.scr**

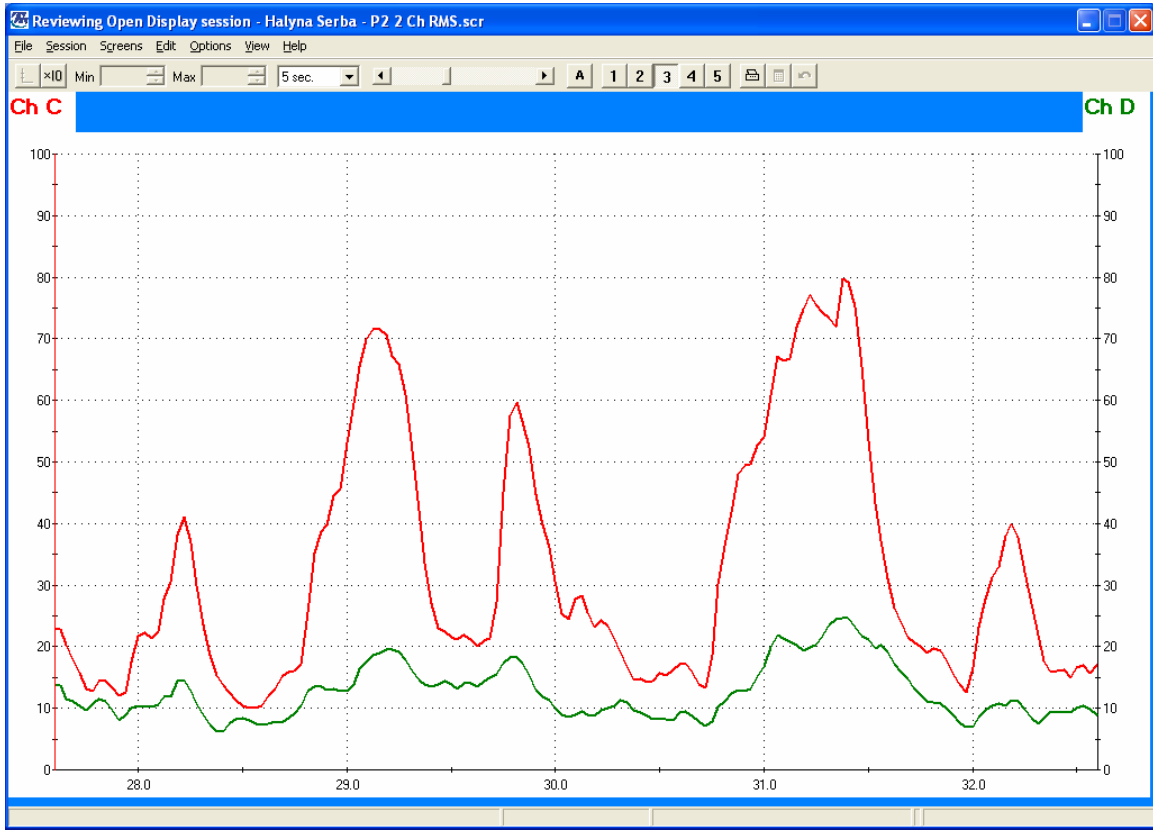
Channel Set: P2 2 Ch EMG.chs

Category: RMS

Description: 2 Ch RMS Line Graph and Bar Graphs.

2 channels of RMS data derived from 2 RMS inputs shown in multi graph and two bar graphs

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## P2 2 Ch RMS.scr

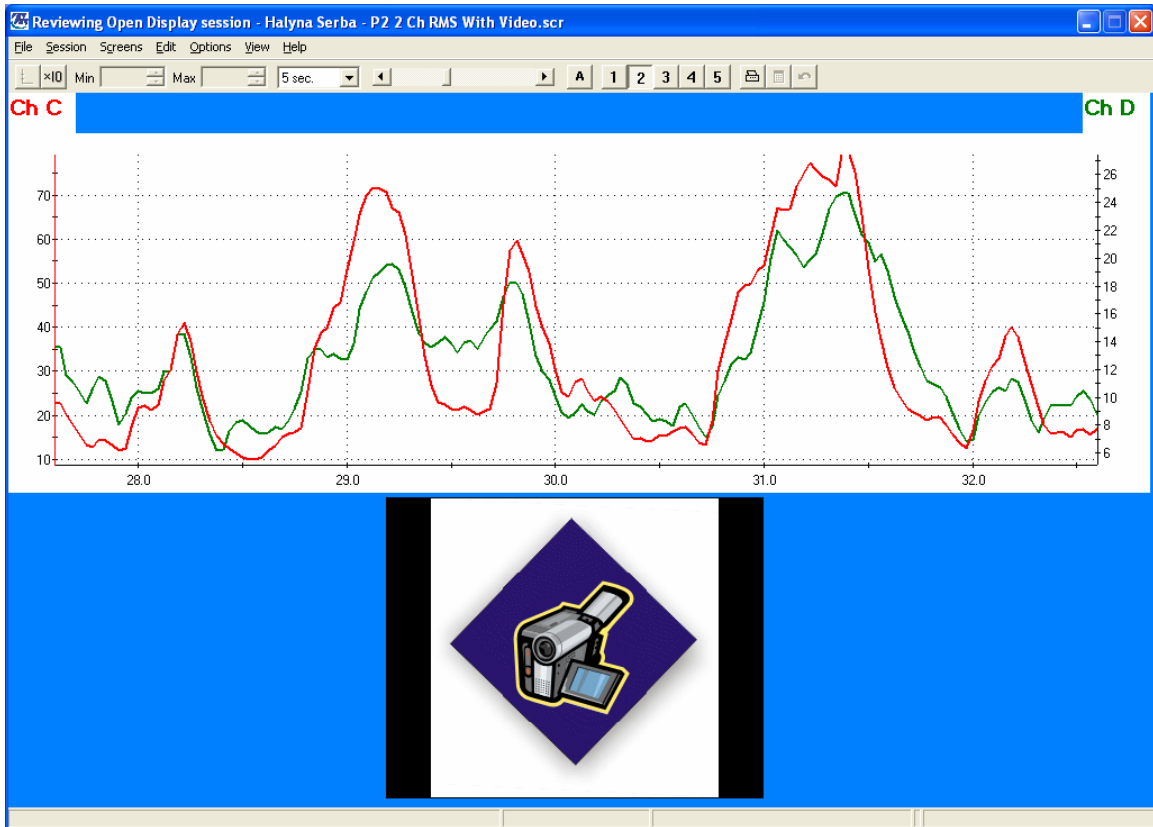
Channel Set: P2 2 Ch EMG.chs

Category: RMS

Description: 2 Ch RMS

2 channels of RMS data shown in a multi line graph.

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### **P2 2 Ch RMS with Video.scr**

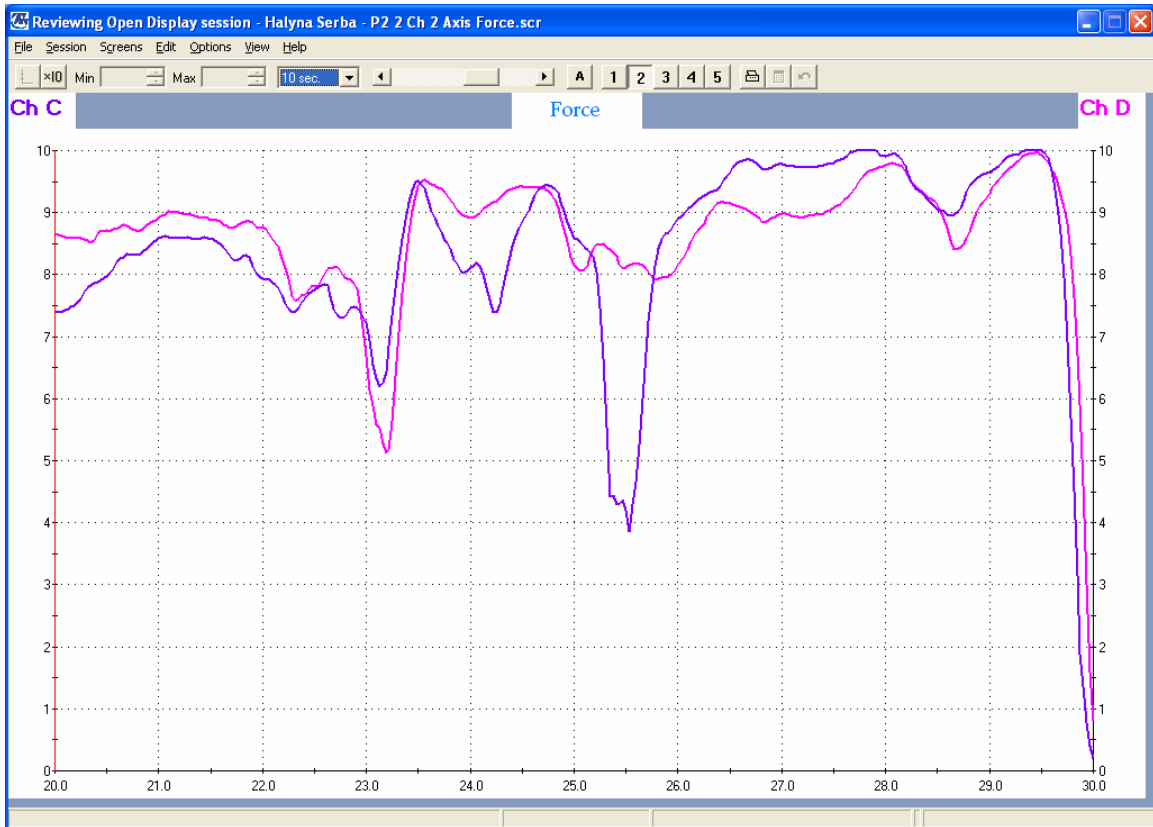
Channel Set: P2 2 Ch EMG.chs

Category: RMS

Description: 2 Ch RMS with Video.

2 channels of RMS data shown in line graphs. It also shows a video view.

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### **P2 2 Ch 2 Axis Force.scr**

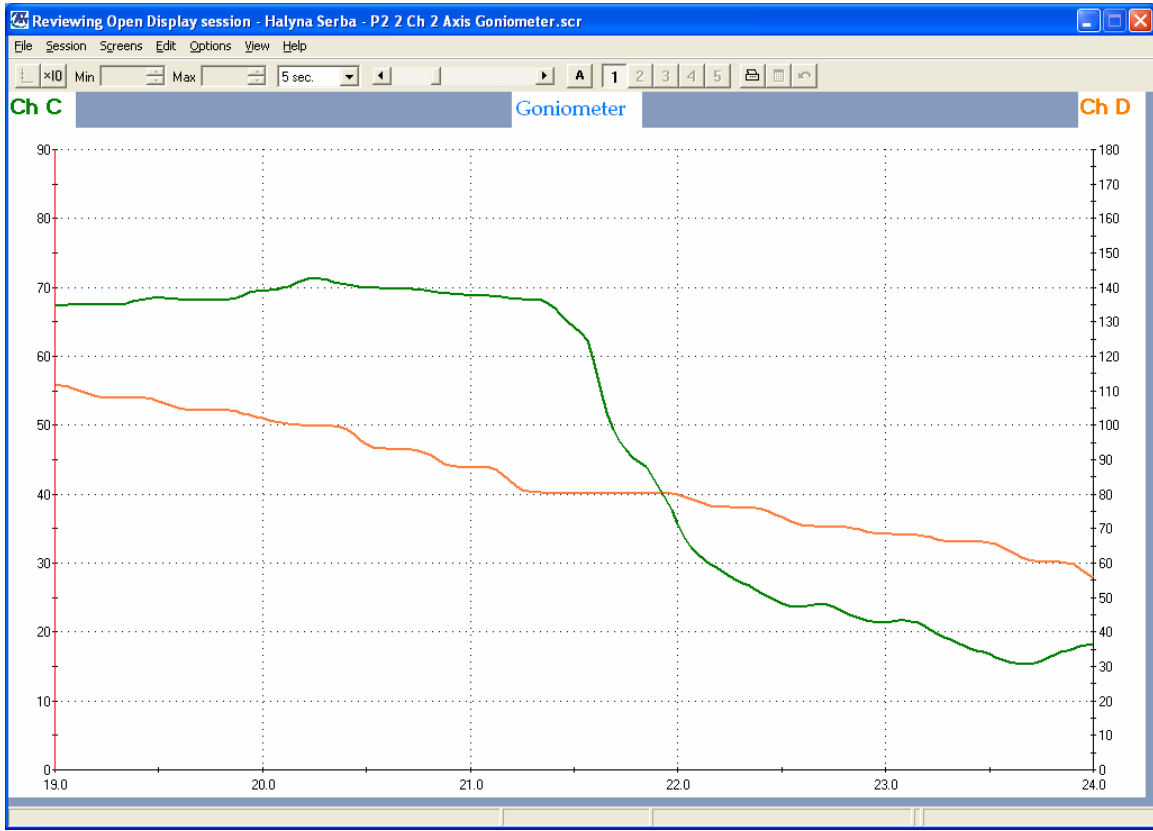
Channel Set: P2 2 Ch Force.chs

Category: Force

Description: 2 Axis Force.

Two channels of dual axis Force displayed on a multi line graph.

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## P2 2 Axis Goniometer.scr

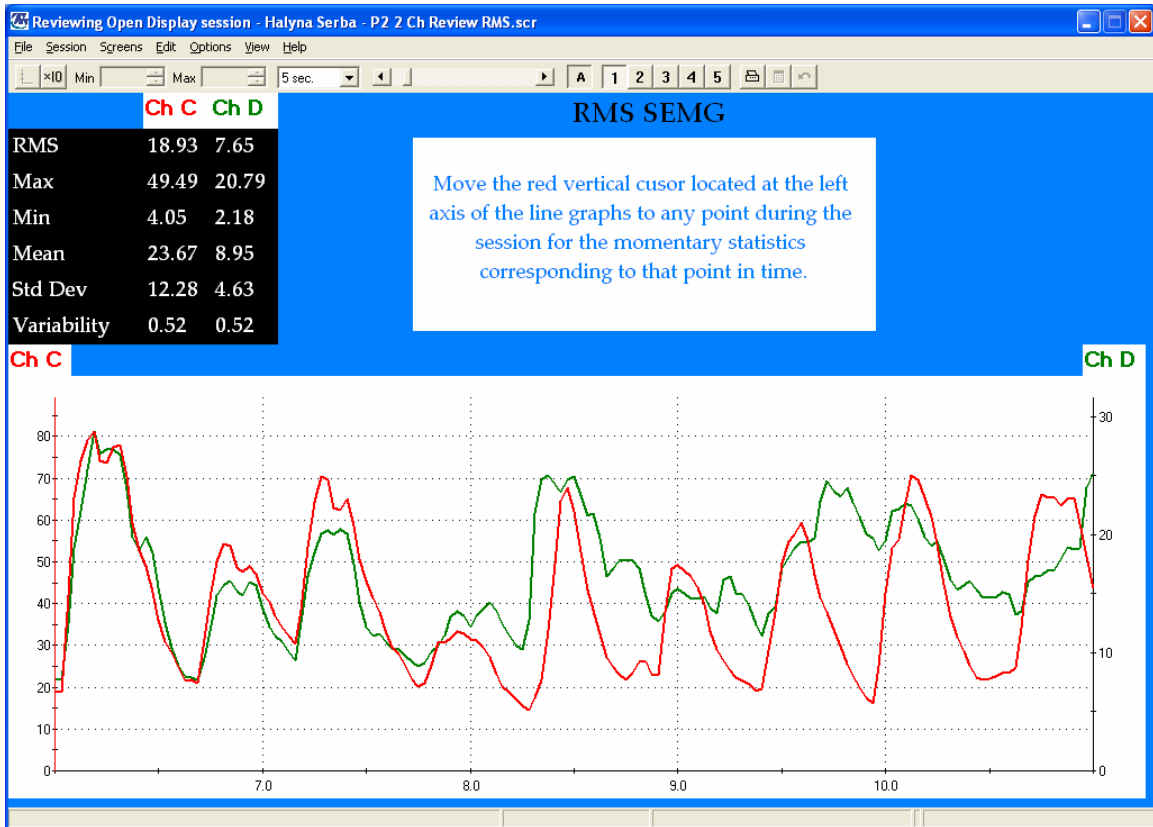
Channel Set: P P2 2 Ch Gonio.chs

Category: Goniometer

Description: 2 Axis Goniometer.

2 channels of dual axis goniometer displayed on a multi line graph.

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## P2 2 Ch Review RMS.scr

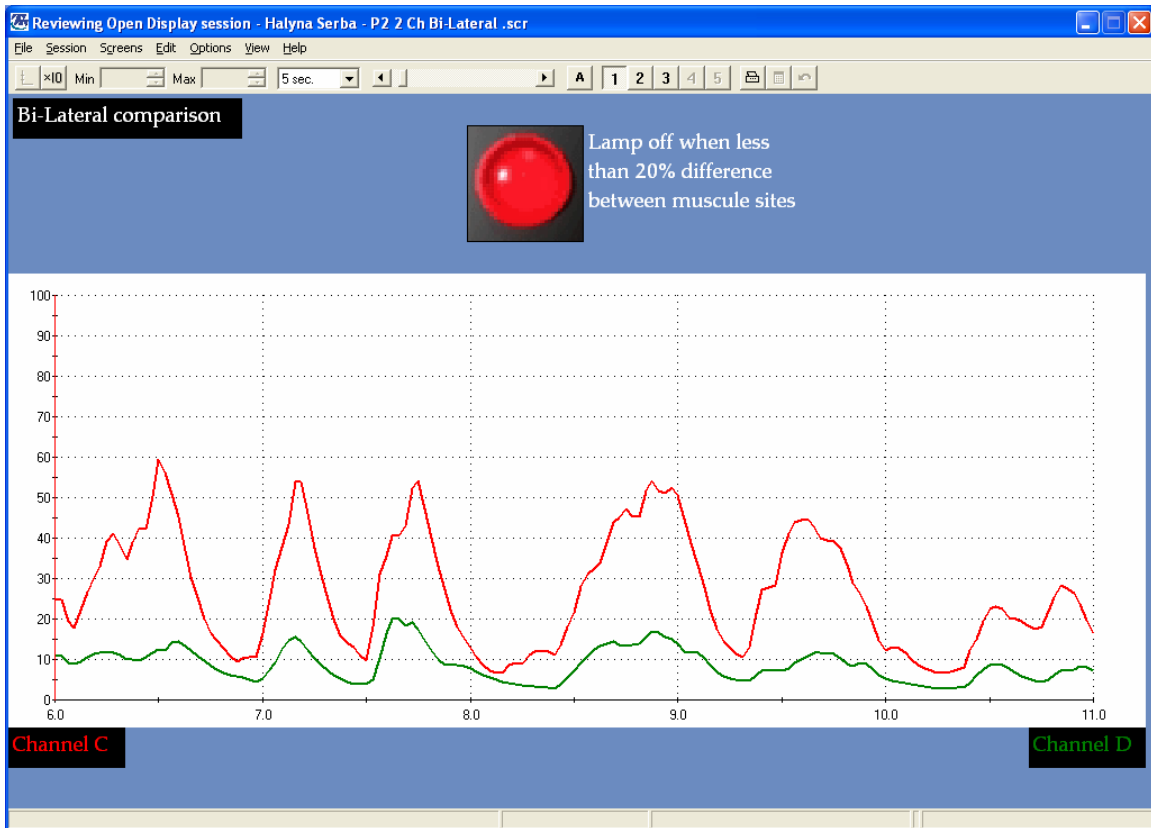
Channel Set: P2 2 Ch EMG.chs

Category: Review

Description: 2 Ch RMS with stats for review.

2 channel review screen, with instruction. RMS data shown.

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### P2 2 Ch Bi-Lateral.scr

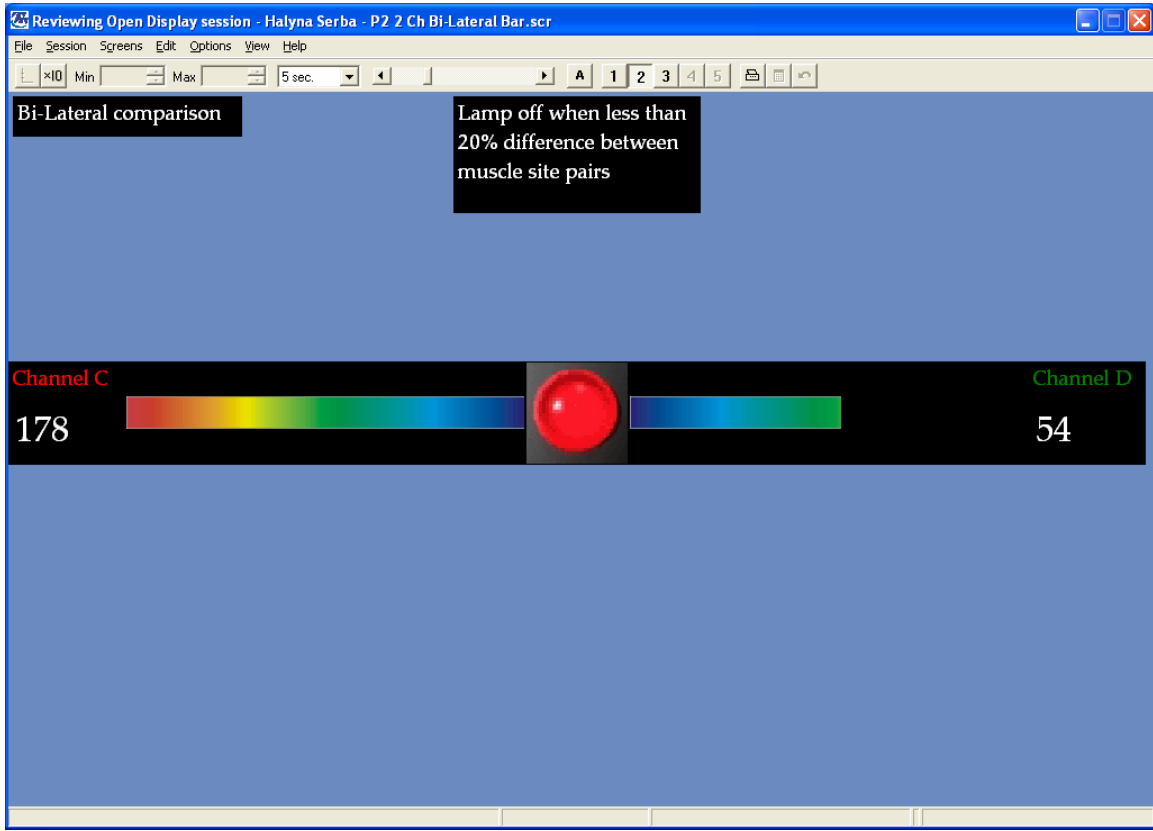
Channel Set: P2 2 Ch EMG Bi-Lateral Differences.chs

Category: Difference

Description: 2 Ch of Bi-Lateral difference.

One pair of channels C vs D, shows difference when greater than 20% indicated by lights turning red. Linegraphs showing RMS SEMG of each muscle site.

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## P2 2 Ch Bi-Lateral Bar.scr

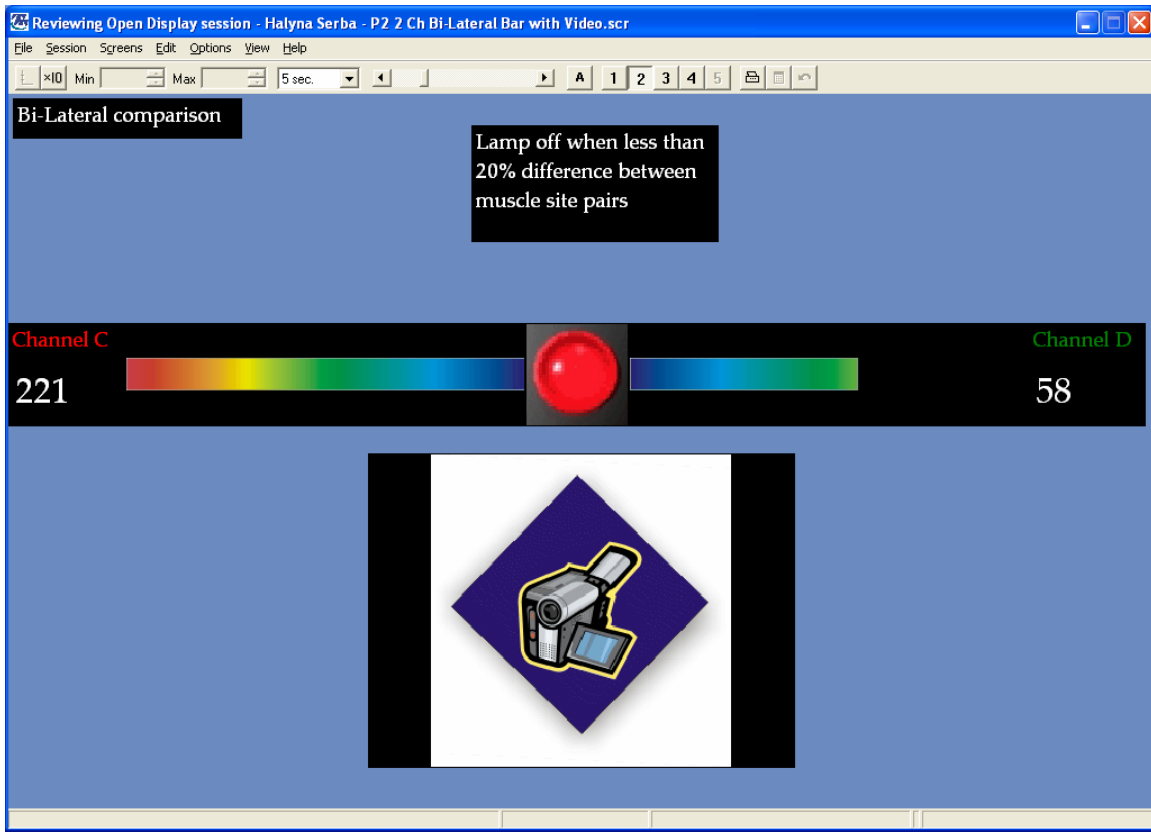
Channel Set: P2 2 Ch EMG Bi-Lateral Differences.chs

Category: Difference

Description: 2 Channels of Bi-Lateral difference.

One pair of channels C vs D showing difference when greater than 20% indicated by lights turning red. Designed with the intent of evaluating lumbar muscle pairs during forward flexion. Layout of the screen such as to aid in the bilateral evaluation of problem areas. Animated bars and digital displays showing RMS SEMG of each muscle site.

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## P2 2 Ch Bi-Lateral Bar with Video.scr

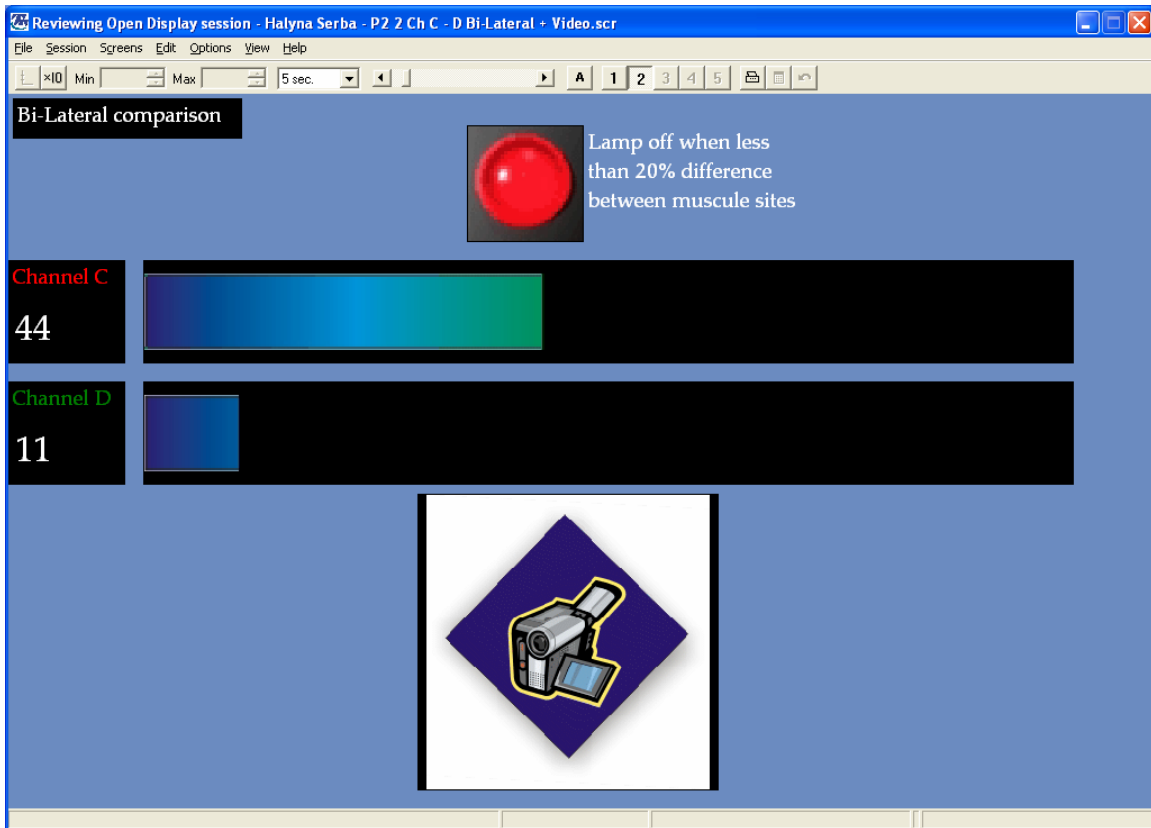
Channel Set: P2 2 Ch EMG Bi-Lateral Differences.chs

Category: Difference

Description: 2 Channels of Bi-Lateral difference.

One pair of channels C vs D showing difference when greater than 20% indicated by lights turning red. Designed with the intent of evaluating lumbar muscle pairs during forward flexion. Layout of the screen such as to aid in the bilateral evaluation of problem areas. Animated bars and digital displays showing RMS SEMG of each muscle site. Includes video display to show web cam footage.

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### **P2 2 Ch C - D Bi-Lateral + Video.scr**

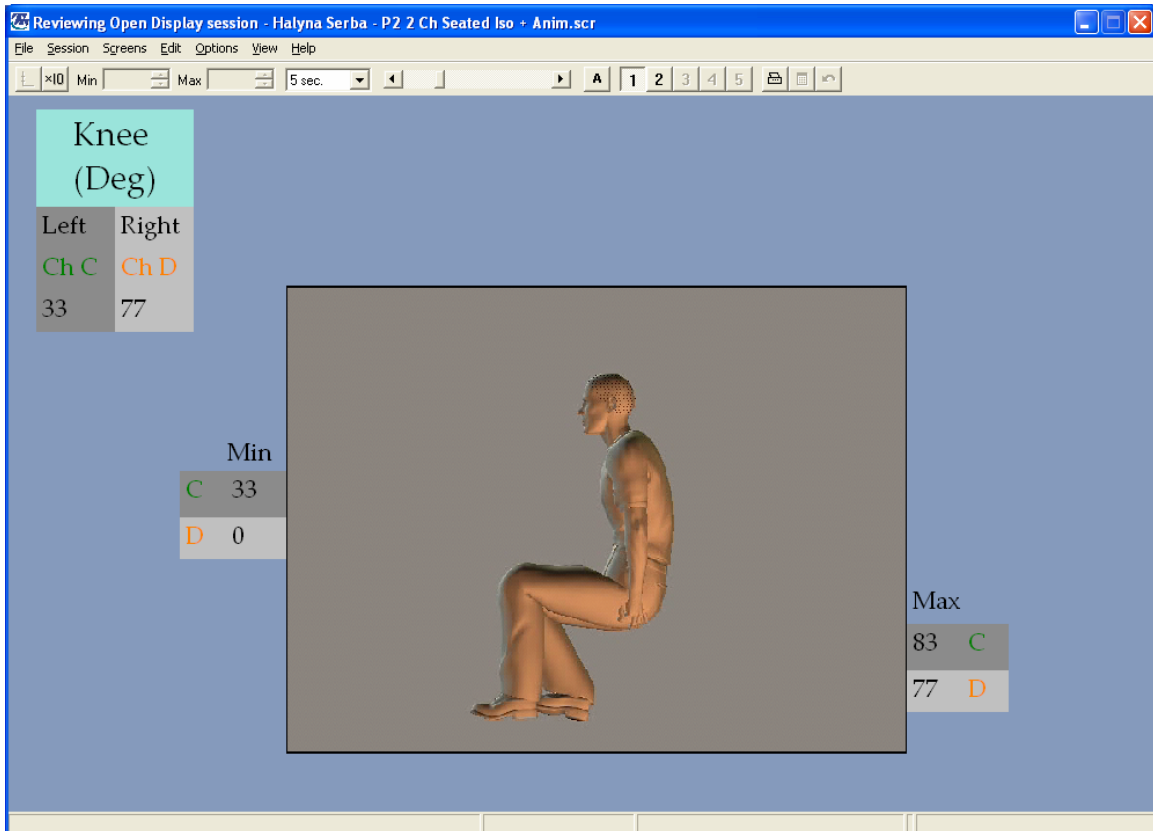
Channel Set: P2 2 Ch EMG Bi-Lateral Differences.chs

Category: Difference

Description: 2 Ch C - D of Bi-Lateral difference with Video.

One pair of channels C vs D, showing difference when greater than 20% indicated by lights turning red. Designed with the intent of evaluating lumbar muscle pairs during forward flexion. Animated bars and digital displays showing RMS SEMG of each muscle site. Video enables viewing of the motion performed.

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## P2 2 Ch Seated Iso + Anim.scr

Channel Set: P2 2 Ch Gonio.chs

Category: Goniometer

Description: Goniometer for Leg Evaluation with Animation

Focusing on the angle of the knee when subject is seated during extension and flexion, this screen displaying the placement of Goniometers, signal value and Max, Min.

Animation works with the client, as they move their leg the animation moves. Set the animation scale to the max – min readings of Goniometer C or D.

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## Required Files for DynaMap Suite 3.0 for ProComp2

### Channel Sets ( .chs )

- P2 2 Ch EMG.chs
- P2 Ch EMG Bi-Lateral Difference.chs
- P2 2 Ch Gonio.chs
- P2 2 Ch Force.chs

### Screens ( .scr )

[P2 2 Ch Goniometers Calibration.scr](#)  
[P2 2 Ch Force Calibration.scr](#)  
[P2 Ch C Test.scr \(also D\)](#)  
[P2 2 Ch Line & Bar.scr](#)  
[P2 2 Ch RMS.scr](#)  
[P2 2 Ch RMS with Video.scr](#)  
[P2 2 Ch 2 Axis Force.scr](#)  
[P2 2 Axis Goniometer.scr](#)  
[P2 2 Ch Review RMS.scr](#)  
[P2 2 Ch Bi-Lateral.scr](#)  
[P2 2 Ch Bi-Lateral Bar.scr](#)  
[P2 2 Ch Bi-Lateral Bar with Video.scr](#)  
[P2 2 Ch C - D Bi-Lateral + Video.scr](#)  
[P2 2 Ch Seated Iso + Anim.scr](#)

### Animations

- Linear R to L Rainbow Bar.avi
- Linear L to R Rainbow Bar.avi
- Man with leg flex.avi
- Binary Red Light.avi

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