

SMEG – MARCARIAN

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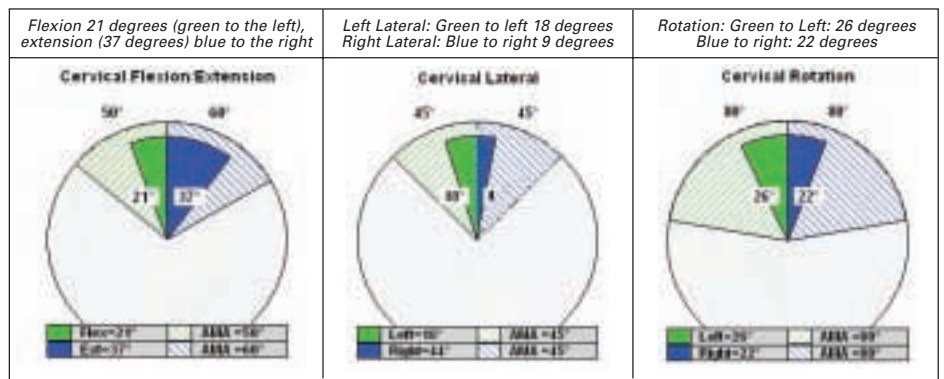
and lower extremes of the spine region being examined.” The difference in results between the two inclinometers is automatically calculated for the user, thus providing significantly more valid data than single inclinometer systems *reducing the potential for user error, and reducing by four the time to perform the test.*

It is important to recognize that if

you bill for ROM testing claiming to meet AMA guides, and are not using a dual inclinometer system you can be charged with committing fraud and may lose your license.

Case Study: Jury Award \$650K

In this particular case (*Alvator vs Stander*), the plaintiff was involved in a rear-end motor vehicle accident. He experienced severe neck pain and symptoms of whiplash. Range of Motion data along with Dynamic Surface EMG testing was performed. Static



ROM Cervical Flex Extension, Cervical Lateral, and Cervical Rotation.

Dynamic sEMG Results: Documenting Soft Tissue Injury Properly

Dynamic 4 Channel Left/Right Rotation

ABNORMAL:
Note in upper half of graph, blue (left CP) fires ALONG with red (right CP) indicating bracing. There is no distinct left right pattern.

The lack of distance between "red bars" indicates amount of co-contraction or bracing. In this case, bracing occurs through all motions.

In the bottom half of graph, the pattern of firing is asymmetrical with the RIGHT SCM (RED) generating a higher level of muscle activity when compared with the left SCM (BLUE). The two peaks should be similar in amplitude (see green bars).

Abnormal Injured Patient: Tested with MyoVision™ sEMG
 Top graph: Cervical Paraspinals. Left is blue, right is red
 Bottom Graph: SCM's. Left is blue, right is red
 Two Sets of Left/ Right Rotation

Normal Dynamic 4 Channel Cervical Rotation Two Sets of Left/ Right Rotation. Top graph is L/R Cervical Paraspinals. Bottom graph is SCM's. Left line is blue, right line is red.

Markers 1, 5: Left Rotation. Markers 2, 4, 6, 8 Neutral
 Markers 3, 7 Right Rotation

Note excessive variability in sEMG signal throughout entire test indicative of muscle irritability and fasciculation that correlates with soft tissue injury.

In left rotation, the left cervical paraspinal fires along with the right SCM. With normals, there is no firing of muscles on the opposite side during motion. In right rotation the opposite occurs.

Normals have little or no firing of muscles on opposite side.

sEMG testing was also performed, but was not focused on in the trial, as static sEMG is not as valuable on its own. The hard data produced by the patient's chiropractor who used our SEMG equipment helped prove that there had been soft tissue injury. The jury awarded the patient \$650,000 which, according to the attorneys, was the largest ever awarded in a case of this type.

Dynamic sEMG Results: Documenting Soft Tissue Injury Properly



Proper cervical electrode placement



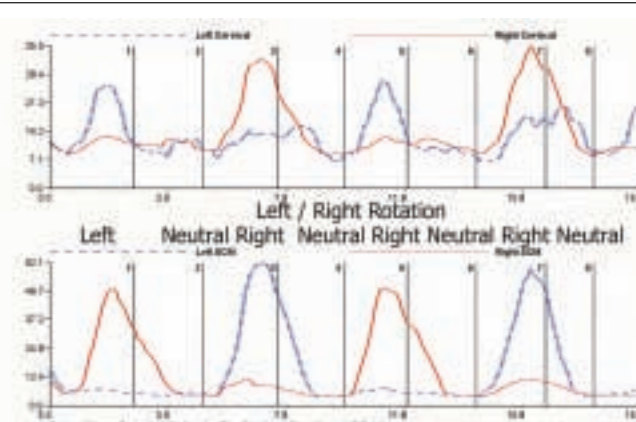
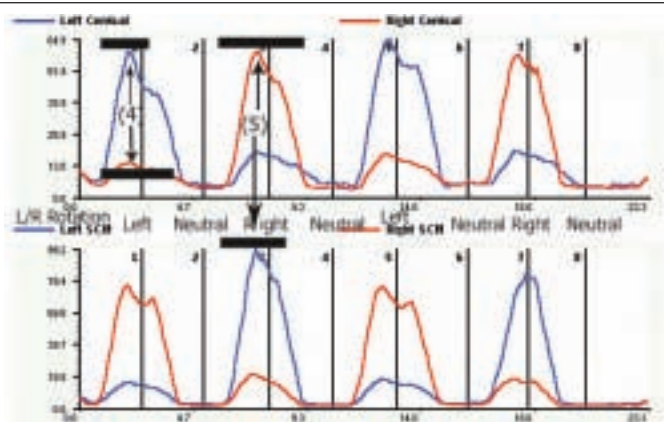
Dynamic testing.

4 Months Post Care: Proving Value of Chiropractic

Without the use of instrumentation, there would be no way of determining how effective care has been. With this particular patient, the graphics below show definitively that 4 months of chiropractic care resolved the patient's complaint and restored proper function. The greatest benefit of documenting injury with Dual Inclinometry and Dynamic Surface EMG is that you have done the best you can to support your patient's condition and can sleep well at night knowing this.

Normal 4 Channel Cervical Dynamic Left/Right Rotation. Top half of graph: Cervical Paraspinals. Bottom half of graph: SCM's. Blue is left, red is right.

Patient 4 months post care. Note how exam is similar to normal graph on left.



The two graphs above clearly show the patient demonstrates normal Dynamic sEMG results after 4 months of care. This is obvious when comparing the pattern of muscle activity with the normal graph above.

Dynamic Surface EMG Augments Range of Motion testing

If there is truly soft tissue injury (a lack of symptom magnification), a limited range of motion will be accompanied by a muscular response. Muscles will "brace and guard" due to the pain created by motion. In addition, there will be noticeable irritability of muscles as demonstrated by great variability in the line graph. Without the abnormal muscle response, the evidence would suggest the possibility of symptom magnification.

How does one select the right equipment?

You may decide that Surface EMG is a diagnostic tool you would like to use in your practice. To find out if you are purchasing the right equipment ask these questions:

1. Does the Range of Motion utilize Dual Inclinometers? Single inclinom-