**WHY DYNAROM VS ROM FOR PI CASES?**

Endpoint Range of Motion vs. DynaROM Motion sEMG
Establish Soft Tissue Injury and Pain When Endpoint ROM is Normal.

"MyoVision’s DynaROM was crucial in settling our $1MM Soft Tissue Case. **Given a choice, I prefer to work with doctors that utilize DynaROM.**"

Elizabeth Foley, Esq.
PI Attorney

**Frequently Asked Questions**

What is the difference between Endpoint Range of Motion and DynaROM sEMG?

**Endpoint Range of Motion 52 degrees is NORMAL:** Measurement is performed with dual inclinometers to assess actual range of motion in degrees.

Endpoint range of motion provides a simple "1 point" measurement of how far the patient can bend into various ranges of motion. It was thought to be the best way to evaluate injury, until the inventor of modern Range of Motion measures spent 12 years evaluating the measurement of muscle guarding.
DynaROM Motion sEMG: 52 Degrees but ABNORMAL: ROM is 52 Degrees, but there is significant muscle guarding, proving injury. Both Range of Motion and Muscle Guarding are assessed simultaneously. This provides the doctor with a more useful measure of soft tissue injury, because muscle guarding is a major component of soft tissue injury, and cannot be documented with Endpoint ROM alone.

Why is Endpoint Range of Motion Hurting your PI Case? Because Endpoint Range of Motion appears normal even when muscle guarding and pain are present. The jury simply sees “normal range of motion” and the game is over. With DynaROM, if muscle guarding exists, the instrument is sensitive to, and displays this as ABNORMAL, thus saving your case.

**Difference between Traditional Endpoint ROM and DynaROM Motion sEMG**

<table>
<thead>
<tr>
<th>Measures</th>
<th>Traditional Endpoint ROM</th>
<th>DynaROM Motion sEMG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures</td>
<td>Single Value ROM in Degrees</td>
<td>Simultaneous Graphed Range of Motion including Muscle Guarding as measured by Attached Electrode Surface EMG</td>
</tr>
<tr>
<td>CPT Code for PI</td>
<td>95851</td>
<td>96002 (test), 96004 (report)</td>
</tr>
<tr>
<td>Reproducibility</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Shows Endpoint ROM value</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Documents muscle guarding: Critical component of soft tissue injury</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Time to perform test</td>
<td>10 minutes</td>
<td>10 minutes plus time to attach electrodes</td>
</tr>
<tr>
<td>Shows quality of Motion</td>
<td>NO: Endpoint value only</td>
<td>YES: Graphs ROM so can see ratcheting when in pain</td>
</tr>
<tr>
<td>Recognized by AMA</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Sensitivity to injury</td>
<td>Approx 40 per cent of those in pain have normal ROM with muscle guarding</td>
<td>Shows both muscle guarding and ROM. Sensitivity significantly higher than ROM on its own</td>
</tr>
<tr>
<td>Research proven?</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

Is there research to prove the value of DynaROM sEMG over ROM and Dynamic SEMG done separately?
The University of Michigan performed a meta-analysis to determine if Surface EMG when combined with Range of Motion would improve the sensitivity and specificity of Range of Motion measures. The Results? “By combining attached electrode Dynamic Surface EMG to Range of Motion, Sensitivity and specificity increased”
This paper was published at the same time patents were filed on the DynaROM system, independent of the system itself.

Common Objections to Use of DynaROM Surface EMG

1. “I’ve heard that Needle EMG is the only EMG, and that Surface is not as good as needle”.

This is a common misconception propagated by insurers for the clear purpose of preventing you from utilizing a tool which can clearly establish soft tissue injury. It is based upon one position paper, produced by the American Academy of Electrodiagnostic Medicine. Insurers hope that you do not actually read the paper, as it’s statement is simple: You can’t do Needle EMG with Surface Electrode EMG. This is equivalent to saying “you can’t measure EKG with a blood glucose monitor. Big deal. No one says you can.

The actual language of the position paper can be seen below: (Exhibit 10, Page 1, Column 1, PP 3 and column 2, pp1) Direct your attention to the second column, text underlined in red.

**TECHNOLOGY REVIEW: THE USE OF SURFACE EMG IN THE DIAGNOSIS AND TREATMENT OF NERVE AND MUSCLE DISORDERS**

American Association of Electrodiagnostic Medicine
American Academy of Physical Medicine and Rehabilitation

This technology review discusses the use of SEMG in the diagnosis of disorders of nerve and muscle. For the purposes of this review, disorders of nerve or muscle include neuropathies, radiculopathies, plexopathies, neuromuscular junction disorders, and myopathies. This review does not comment on the use of SEMG in the diagnosis of central nervous system disorders, problems with coordination, fatigue, psychological disorders, or pain as an entity independent of nerve damage.

If one reads this position paper, it is clear that they EXCLUDE use of Surface EMG in diagnosis of “pain as an entity independent of nerve damage”.

CONCLUSION: The AAEM paper which is referenced to deny the value of Surface EMG actually says nothing about the topic at all. Again, they hope you are not reading it.

Has any research compared surface and needle EMG?

To take it a step further, a group of researchers wanted to answer the question about the difference between Needle and Surface EMG in evaluating for back pain. They published the following paper.

**Electric Behavior of Low Back Muscles During Lumbar Pelvic Rhythm in Low Back Pain Patients and Healthy Controls**

Evans Silvestre, MD, Joshua Parents, MD, PAO, Gong Hsiang, MD, PhD, Sigurd Skornska, MD, PhD

ABSTRACT: The pelvic rhythm is a normal movement sequence that, when altered, can cause low back pain. The pelvic rhythm is a normal movement sequence that, when altered, can cause low back pain. The pelvic rhythm is a normal movement sequence that, when altered, can cause low back pain.

- The electromyographic (EMG) activity of the low back muscles during this movement sequence has been studied extensively. However, the EMG activity of the low back muscles during the pelvic rhythm has not been extensively studied in low back pain patients.
- The purpose of this study was to determine whether there was a difference in the EMG activity of the low back muscles during the pelvic rhythm in low back pain patients and healthy controls.
- The study included 20 low back pain patients and 20 healthy controls. The EMG activity of the low back muscles was recorded during the pelvic rhythm.
- The EMG activity of the low back muscles was compared between the two groups.
- The results showed that the EMG activity of the low back muscles was significantly different between the two groups.
- The EMG activity of the low back muscles during the pelvic rhythm was higher in the low back pain patients than in the healthy controls.

Conclusion: When evaluating for back pain, both Needle and Surface readings correlated highly, yet the conclusion of the authors?
The results indicate that averaged surface recording (Surface EMG) is a valuable tool in the investigation of dynamic spine functions in back pain patients.

### Table of Difference between Needle and Surface Electromyography

<table>
<thead>
<tr>
<th></th>
<th>Needle EMG</th>
<th>Surface EMG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong># of Studies on Pubmed</strong></td>
<td>2,390</td>
<td>9,731</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Evaluate for nerve damage</td>
<td>Evaluate for muscle guarding and patterns of activity associated with soft tissue injury</td>
</tr>
<tr>
<td><strong>Reproducibility</strong></td>
<td>0.22 - 0.62</td>
<td>0.65 - 0.97</td>
</tr>
<tr>
<td><strong>Use in Motion Studies</strong></td>
<td>Poor, as needle changes position relative to motor neuron in motion.</td>
<td>Excellent. Surface Electrodes do not change position as dramatically in relation to source of electrical activity</td>
</tr>
<tr>
<td><strong>Pain level</strong></td>
<td>High: Reserved for serious nerve damage studies</td>
<td>None: Can be used with low back pain patients and in motion</td>
</tr>
</tbody>
</table>

**CONCLUSION:** Needle EMG is a tool which is used to evaluate for nerve damage. Surface EMG is used to measure muscle activity as a response to pain and injury. Both are valid tools for their intended purposes. One is not better or worse than the other. Needle EMG is painful, and therefore cannot be used in evaluating for muscle guarding. Needles move in relation to muscle fibers if the patient what does the actual paper say? Paper used to support claim that Surface EMG has little or no value: American Academy of Electrodiagnostic Medicine.

**SCAM ALERT:** The most common misrepresentation made by IME’s Insures and in policies such as Insurance Company Policies and the Official Disability Guidelines Policies rely upon the fact that there are TWO kinds of Surface EMG, and instead of pointing this out, they focus all their negative views upon the one which is less credible. Verbiage is the key. If you hear the term “Paraspinal Surface EMG” in almost all cases, they are referring to Static sEMG.

The two types are known as Static sEMG (called Paraspinal sEMG, Static sEMG Paraspinal Surface EMG) and Dynamic sEMG (known also as Paraspinal sEMG, attached electrode sEMG, Motion sEMG).

This is the most clever attempt at deception on the part of insurers. This is a question of “language” rather than substance. How?

There are two types of Surface EMG.

Paraspinal sEMG, also known as Static sEMG. DynaROm Surface EMG

<table>
<thead>
<tr>
<th>Paraspinal Surface EMG</th>
<th>Dynamic Surface EMG</th>
</tr>
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<tbody>
<tr>
<td>Measured in the neutral posture using handheld electrodes as like a</td>
<td>Measured in motion with attached electrodes.</td>
</tr>
</tbody>
</table>
Can you show me proof of a policy which misrepresents Static as Dynamic SEMG?

Let’s take a quick peek at the policy presented by The Mercy Guidelines. They purposely avoid using the term “attached electrode Dynamic SEMG” as they cannot make claims that a tool which has a CPT code is an experimental tool. Read it closely: Clearly even in the Mercy Guidelines routinely used to deny value of Surface EMG they separate out Static and Dynamic SEMG. This is still used to propagate the myth.
Proof of the misrepresentation in deposition in the courtroom?

Look at how an experienced attorney captures this IME in their attempt to apply “smoke and mirrors” approach to discredit Surface EMG.

What is happening here? The IME Expert Witness is attempting to discuss ONLY Static sEMG. If the attorney falls for it, the credibility of the exam has been destroyed, and the discussion is focused on Range of Motion which was normal.

Establishing Value of DynaROM Motion SEMG in the courtroom.

Merritt vs. DOH Case #1411-1190RX  David vs. Goliath
The following are the facts.

1. The State of Florida removed from the list of Approved Diagnostic Devices which required reimbursement in Florida the MyoVision System.

2. The plaintiff, Richard Merritt, DC decided to challenge this rule, and asked all the experts in the Chiropractic Profession to join in and fight this battle with the state. He had found excellent value in proving soft tissue injury with the tool, and felt it was important to his patients.

3. Merritt reached out for help from all the experts in the Chiropractic Profession, but only David Marcarian, designer of the MyoVision appeared to testify on behalf of the Chiropractic Profession.

4. The State of Florida, in an attempt to prevent the Chiropractic Profession from prevailing, was joined by 300 insurers. Now the case was between David Marcarian as the only expert witness against the State of Florida and 300 insurers. There were in total 75 Attorneys representing the State of Florida in this case.

5. The State of Florida and the insurers hired 9 expert witnesses including an MD/PhD who utilized Surface EMG in his PhD dissertation.

6. The Judge (Judge Diane Cleavinger) was a scientist by training, and spent an entire year reviewing all the evidence presented by both sides.

7. The Judge handed down a 44 page decision finding overwhelming value in the use of the MyoVision in evaluating soft tissue injury.

8. The decision was appealed to the Superior Court level. The Superior Court in a 3-0 ruling ruled that the original judges decision would stand. The Supreme Court of Florida rejected the appeal from the State and the insurers.

Why would the insurers spend millions of dollars to attempt to wipe out this tool?
Simple answer: Because it is the only tool which can establish pain and injury in soft tissue injury cases. The “old school” use of Range of Motion made it easy for them to battle with their IME’s as ROM data was not sensitive to muscle guarding and pain. As an example, a ballerina in an auto accident may go from extreme range of motion to normal range of motion.

This only helps insurers, not patients.

How does this help you? This case has been cited in many state courts. No judge is going to want to go through this process and the insurers have accepted it at this point.

Is there a CPT Code for Billing the test, and does this help establish credibility and admissibility?

According to Judge Cleavinger, the answer is “yes” and “yes”.

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The 47 Page decision of Judge Cleavinger in Case #04-1149RX,(see Exhibit 09) unanimously affirmed by Superior Court case # 1D05-729 (see attached Exhibit 11) determined that the CPT code 96002 does in fact establish the MyoVision exam as valid for evaluating injury due to Motor Vehicle Accidents.

Administrative Law Judge Dianne Cleavinger concluded the following with regards to this question:

43. In order to be assigned a five-digit CPT Code, the procedure must be “consistent with contemporary medical practice and be . . . performed by many practitioners in clinical practice in multiple locations.

44. Code assignment is performed by a CPT Editorial Panel, consisting of 17 physician members, and a larger CPT Advisory Committee of medical and allied health professionals. Among the objectives of the CPT Advisory Committee is to “provide documentation to staff and the CPT Editorial Board regarding the medical appropriateness of various medical and surgical procedures. . . .” (emphasis supplied)

45. Among the considerations for Code assignment are the requirements “that the service/procedure is a distinct service performed by many physicians/practitioners across the United States,” and “that the clinical efficacy of the service/procedure is well established and documented in peer review literature.”

46. Dynamic SEMG has been assigned a five-digit CPT Code 96002. Similarly, The review and interpretation of dynamic SEMG has been assigned a five-digit CPT Code 96004.

47. The fact that SEMG has been found to meet the requirements of the AMA for assignment of five-digit CPT Codes provides evidence of the medical value of the test, and strong evidence of the high level of general acceptance of the test by the relevant provider community.
This decision was unanimously upheld at the Superior Court Level where the following was added (see Exhibit 11, Page 8):

> reading, the final order clearly set forth the finding that surface EMG testing has significant medical value as a diagnostic tool with respect to the treatment of a patient suffering from injuries like those arising out of a motor vehicle accident. This finding is supported by competent substantial evidence and demonstrates that surface EMG

**CONCLUSION:**
MyoVision testing is a valid test for evaluating for soft tissue injury as supported by the AMA’s CPT Code for the exam being the 5 digit code, 96002.

This was not just the ALJ’s interpretation, but based upon the CPT code book itself.

**Are there any control group studies showing the value of Surface EMG? Specifically was the MyoVision used?**

Reviewing the peer reviewed, published research paper (Exhibit 07) titled “Chronic Low Back Pain Assessment Using Surface EMG” Dr. Fish’s concerns regarding the ability of the MyoVision to evaluate for Chronic low back pain (CLBP) are addressed directly.

The title of the paper speaks volumes (see Exhibit 07 below):

He admits reviewing this paper, yet does not appear to admit that his statement regarding the inability of the MyoVision exam to evaluate for Chronic Low Back Pain is completely false and incorrect.

**Chronic Low Back Pain Assessment Using Surface Electromyography**

The abstract for the paper is shown below:
This investigation examined surface electromyography as an additional tool in the comprehensive clinical evaluation of patients with chronic low back pain (CLBP). Electromyographic signals from electrodes placed in the lumbar area of 30 CLBP patients and 30 non-pain control subjects were compared. Patients and controls were matched for age, gender, and body mass index. Paired t test showed a statistically significant difference between the two groups. The muscle activity mean values were threefold higher in CLBP patients than in controls ($P < 0.00001$) in the static testing, and twofold higher in CLBP patients than in controls ($P < 0.00001$) in the dynamic testing. Our findings indicate that surface electromyography assessment of the paraspinal muscle activity may be a useful objective diagnostic tool in the comprehensive evaluation of CLBP.

IMPORTANT NOTES:

1. This paper is titled: “Chronic Low Back Pain Assessment Using Surface EMG” It deals directly and conclusively with statements such as “MyoVision cannot be used to evaluate for Chronic Low Back Pain (CLBP)”. This paper determined with statistical significance the opposite to be true.
2. The paper is peer reviewed, meaning that scientists from all areas reviewed the paper prior to publication and determined its conclusion was accurate.
3. The paper determined that the group with Chronic Low Back Pain demonstrated statistically significant differences in MyoVision Exam (Dynamic sEMG) data in comparison to the control group, establishing that the device can separate out those with Chronic low back pain from controls.
4. Under the “patients” section on page 662, it states clearly that “LBP was present for at least 6 months”.

**Patients.** On the basis of the selection criteria below, the charts of 30 CLBP patients were randomly retrieved from a pool of approximately 80 records of patients who had received SEMG. The age range for the CLBP patients was between 24 and 56 years, with a mean age of 40.9. They included 22 men and 8 women. As described in a previous study, the selection criteria for patients (cases) included:

1. LBP that had been present for at least 6 months and had been interfering with the patient’s lifestyle.

The icing on the cake? They used a MyoVision for the study, giving you instant credibility in the courtroom.

From page 662, in Exhibit 06:

**Equipment**

This study used the MyoVision EMG 3000 (PBI/MyoVision, San Diego, CA).
Furthermore, in this study the use of one of the latest and more technologically advanced SEMG devices available has contributed to a more reliable collection and processing of data, giving more strength to this analysis.

How did the AMA Determine it belonged in the AMA’s “The Practical Guide to Range of Motion Assessment”?

The inventor of modern day Range of Motion and author of the book, John Gerhardt, MD, spent 12 years utilizing the MyoVision device prior to concluding: “The DynaROM system’s integrated use of sEMG and true wireless dual inclinometry is brilliant. The Surface EMG component effectively augments ROM by assessing effort”.

The bottom line? DynaROM Motion SEMG Revolutionizes The Evaluation of Soft Tissue Injury Cases.

Knowledge is Power. Learn to use this new tool, and you will more accurately assess and be capable of obtaining fair settlements in a more expeditious and efficient manner.

Written by:

David Marcarian, MA
Former NASA sEMG Researcher
NIH Principal Investigator
Designer of the MyoVision DynaROM System
Contact information:  David@myovision.com  206-357-6501

www.myovision.com  www.myovisioninfo.com