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UPGRADING YOUR REGISTERED BOARD CERTIFICATION CREDENTIAL

Those practitioners currently board certified by ABDA as Disability Analyst and Fellow who have now completed at least nine years of professional experience in rehabilitation or healthcare are eligible to apply for Senior Diplomate status. If you wish to receive information on how to apply, please fax: 615- 296-9980 expression of interest. For current ABDA members in good standing, no examination will be required at this time.

We are pleased to announce that qualified members with 20 years or more of professional experience as a **Senior Disability Analyst and Diplomate** and who have been board certified for no less than eight years are eligible to apply to upgrade their credential to Emeritus status. This designation may be used on all correspondence, business cards, letterhead, etc., as appropriate. If interested, please forward a request in writing, current vita and $284 US processing fee issued to ABDA. Please send items to: ABDA, Credentialing Committee, 1483 N. Mt. Juliet Road, #175, Mt. Juliet, TN 37122, Tel: 629-255-870, Fax: 615 -296-9980 or Email: **office@eventsm3.com.**

Our Team

❖ **James Cox DC, DACBR** – Graduated from the University of Health Sciences, Doctor of Chiropractic, Board Certified Chiropractic Radiologist, Inventor of the Cox line of flexion-distraction tables, Practices in Fort Wayne, Indiana. https://www.coxtechnic.com/

❖ **Frank Mascaro MD** – Medical Radiologist at WNY MRI

❖ **Randall Loftus MD** - Medical Radiologist at WNY MRI

❖ **Joanna Garvey DC** – Palmer College of Chiropractic graduate, Doctor of Chiropractic and Board Eligible Chiropractic Neurologist.

❖ **Carol Jackson-Gibson MD** - Medical Radiologist at WNY MRI

❖ **Samantha Wilfong DC** - Doctor of Chiropractic, Graduate of D'Youville Chiropractic Program, Assistant Professor University of Buffalo Jacob's School of Medicine.

❖ **David Marcarian MA** – Master degree from NASA University Program / San Jose State University. BA from Potsdam College of Arts & Sciences, Potsdam, NY. Former NASA researcher, Instructor University of Buffalo Jacob's School of Medicine, inventor of the DynaROM and owner of MYOVISION. https://www.myovision.com/

❖ **Gary Smith DC** – Graduate of Northeast College of Health Sciences, Doctor of Chiropractic and Board Certified by the International Board of Electrodiagnosis. Assistant Professor University of Buffalo Jacob's School of Medicine

❖ **John Strom DC** – Doctor of Chiropractic, Graduate of Palmer College of Chiropractic, Assistant Professor University of Buffalo Jacob's School of Medicine.

❖ **Mark Studin DC, FASBE(C), DAAPM**, Doctor of Chiropractic, Graduate of New York Chiropractic College, Adjunct Assistant Professor, University of Bridgeport, School of Chiropractic, Adjunct Professor of Clinical Sciences, Cleveland University Kansas City College of Chiropractic, Graduate Medical Educational Provider, State University of New York at Buffalo, Jacobs School of Medicine and Biomedical Sciences, Post-Doctoral Education Department. https://www.academyofchiropractic.com/ , https://university.teachdoctors.com/index.php?

❖ **Joseph Serghany MD** - Medical Radiologist at WNY MRI

❖ **Jennifer Sperrazza DC** – Doctor of Chiropractic, Graduate D'Youville Chiropractic Program, Assistant Professor University of Buffalo Jacob's School of Medicine.

❖ **Geoffrey Gerow DC, DABDA, DIANM, CHCQM:** Graduate and former teacher at the National University of Health Sciences, Doctor of Chiropractic, Diplomate of the American Board of Disability Analysts, Board Certified by the International Academy of Neuromusculoskeletal Medicine, First Director and former Assistant Professor of the D'Youville Chiropractic Program. Assistant Professor State University of New York at Buffalo, Jacobs School of Medicine and Biomedical Sciences. Board Certified Impairment Rating by NAAIRP, Board Certified ABQAURP, Editor for MedPix®. https://www.chirobuffalo.com/why-choose-us/

It has been 27 years since I became a "Senior Disability Analyst and Diplomate" of the American Board of Disability Analysts. It seems like yesterday. Today I would like to introduce the readers to two exciting possibilities: The first is a location to publish cases with interesting imaging – MedPix® (Website: https://medpix.nlm.nih.gov/home).

The Chief Editor is none other than Dr. James Smirniotopoulos, an ASNR 2021 Gold Medalist, a Professorial Lecturer at George Washington University, and a retired Professor and Chair of Radiology at Uniformed Services University of the Health Sciences. Dr. Smirniotopoulos personally invites those interested in publishing to do so on MedPix®. A description of the site is as follows: "MedPix® is a free open-access online database of medical images, teaching cases, and clinical

topics, integrating images and textual metadata including over 12,000 patient case scenarios, 9,000 topics, and nearly 59,000 images. Our primary target audience includes physicians and nurses, allied health professionals, medical students, nursing students and others interested in medical knowledge. The content material is organized by disease location (organ system); pathology category; patient profiles; and, by image classification and image captions. The collection is searchable by patient symptoms and signs, diagnosis, organ system, image modality and image description, keywords, contributing authors, and many other search options. In addition to searching and browsing images and cases, the MedPix® website provides free AMA Category 1 CME credits online. Earn up to 30 minutes of CME with each completed case. We are actively seeking new case contributions - which become your digital publication on MedPix® at the National Library of Medicine. Case description, images, and captions can be uploaded using any browser. Please join us in supporting one of the world's largest Open-Access Healthcare Teaching Files."

As part of MedPix®, I am an editor of publications completed by 3rd and 4th year medical students attending the State University of New York, Jacob's School of Medicine. Currently, we have well over 100 such publications.

The second exciting point I would like to discuss surrounds the application of Range of Motion Evaluation. As evaluators of Disability, we find when deriving the level of impairment, such involves multiple complexities that fit into a composite whole. These pieces are independent but also supporting of one another. In NYS the concept of Range of Motion assessment is of medicolegal importance in post-vehicular collision evaluation and relative to worker's compensation patients. Such is clear when using The AMA Guides to the Evaluation of Permanent Impairment 5th Edition. [1]

On page 558 of the AMA Guides to the Evaluation of Impairment 6th Edition 2008 [2] (current update is digital 2022) we read "Range of motion is no longer used as a basis of defining impairment, since current evidence does not support this as a reliable indicator of specific pathology or permanent functional status." The value of range of motion alone, which was considered important in the 5th edition and with which some states still adhere, is minimized in the 6th edition. In the next sentence on the same page, we read "However, range of motion may be used to monitor clinical progress in individuals".

John J. Gerhardt, MD; Clinical Associate Professor in Orthopedics and Rehabilitation Emeritus sensed this quandary concerning the application of range of motion when he wrote "The Practical Guide to Range of Motion Assessment "(originally published by the American Medical Association in 2002 and re-printed with repagination in 2009) [3]. On page 45 figure 2-27, he demonstrates the use of monitoring physiological function during range of motion. This is a relatively new concept to some. In a letter dated 05/30/2009, Dr. Gerhardt identifies the concept of ROM and Dynamic sEMG simultaneous evaluation as being a superior means of evaluating ROM. Such information was published after publication of the 6th edition
(Copy of figure and letter available upon request gjgerow@buffalo.edu).

The only direct reference to spine motion relative to impairment classification occurs on pages 578-579 in the 6th edition of the guides. Here the Alteration of Motion Segment Integrity is addressed relative to flexion-extension studies of the spine. To qualify for that categorization in the Diagnosis-Based Impairment Class Assignment, Regional Grids: A translational movement of 20% of the anterior to posterior distance, of the vertebral body in either the cervical or lumbar spine is needed of a suprajacent segment to a subjacent segment. These assessments would be made from plain film stress radiography. Croft has clarified this movement as being either anterior or posterior but not the addition of both. [4]. Although some have indicated that the distance can be the sum of anterior and posterior motion, he indicates that White [5] seemingly settled this issue. Although the authors of the

6th guides utilize the 20% ratio under a section entitled Cervical Spine AOMSI, they also note that an AP translation >2.5 mm for the thoracic spine, >4.5 mm for the lumbar spine, and >3.5 mm for cervical spine all indicate segmental instability or AOMSI. Croft concludes that some ambiguity may remain but is adamant that either anterior or posterior translation is measured. Krause [6] appears to agree with Croft as he writes, "In the 6th edition, the AOMSI measurement for the cervical spine is described as the translation measurement being greater than 20 percent anterior **or** greater than 20 percent posterior to the relative translation of one vertebra on another. This is not felt to be an additive value of each anterior or posterior, but rather the value associated with the greatest or either".

In the AMA Guides 5th edition, there was a correlation between degree of motion to degree of whole person impairment (WPI) as it would apply to the spine. The 6th edition essentially, although it recognizes value of global regional range of motion, the direct correlation to WPI is removed. Some States, such as NY, do not ascribe to any edition of the AMA Guide, but rather use their own methods particularly in worker's compensation cases. [7]

Various States have codified editions of the guides for medicolegal purposes. Currently, there are 19 states that ascribe to the 6th edition, 12 States that use the 5th edition, and two States that use the 4th edition of the Guides. [8]

In NYS, although range of motion is highly touted in medicolegal circles for the importance at understanding the disability of the patient, a direct correlate to degree of impairment does not exist. A range of motion correlate to impairment level in Worker's Compensation contributes to tables 11.1 Soft tissue spine conditions – Non-Surgically Treated and table 11.2 Surgically Treated Spine Conditions ONLY as the continuation of symptoms. [7]

Range of motion of the spine is a useful parameter. In the setting of impairment/disability relative to the cervical spine, Kraus found the single greatest predictor for long term disability was cervical range of motion. [9]. In the literature review done by Colloca and Hinrichs [10], we find a direct correlation between range of motion and spinal muscular motricity of the lumbar spine during flexion. Essentially, "In normal trunk flexion with the knees straight, the 5 lumbar vertebral segments flex forward during the first 50° to 60°, followed by the pelvis rotating between the hips". It is understood that at 75% to 85% of trunk flexion, the lumbar spine reaches its maximum range of motion, and the pelvis contributes the remainder of trunk flexion. [13]. When Floyd and Silver published their ground-breaking article [11] they evaluated paraspinal muscle activity during ranges of motion of the spine and defined the term Flexion-Relaxation of the lumbar spine. [11, 12]. The flexion-relaxation phenomenon is where an asymptomatic individual with sufficient forward flexion of the lumbar spine, should experience relative relaxation of the erector spinae, but in a symptomatic lower back pain patient there would be continuation of muscle tonus. [14-22].

> *The sixth edition is not saying that range of motion is not an important parameter to be assessed regarding care. Rather, it is just saying that specific range of motion will not be used to calculate the percentage of impairment.*

In light of the 6th edition minimizing specific range of motion values, and if you are using the 5th edition to calculate impairment percentage, you would need to demonstrate that the values achieved are valid. Simply using the three repetitive values within 5 degrees or 10 percent of one another will not alone be sufficient on impairment assessment. You will need to demonstrate value of the measurements by other means. If you are using the sixth edition but want to comment in your writeup upon the values of range of motion and not use them to calculate percentage impairment, then you would also need to substantiate that the range of motion values achieved has legitimacy.

When performing our disability/impairment evaluations, beyond the patient's subjective statements and the testing performed, is there a physiological voice that supports our findings? Yes, and we can correlate such with other studies. Marcarian, who expanded on the work of Floyd and Silver's concept of evaluating paraspinal activity during range of motion, developed and invented DynaROM technology [23]. Areas of the cervical [24, 25] as well as the lumbar spines could be evaluated for the 6 cardinal ranges of motion that each possesses.

The reason John Gerhardt added the DynaROM to the AMA's Range of Motion Text is that he felt range of motion needed an additional measure to validate the findings. As suggested by Geiser and others, by simultaneously measuring muscle activity with range of motion, many issues with range of motion were resolved. Firstly, the difficulty in separating symptom magnifiers from those with truly limited range of motion. During motion, muscles are naturally and involuntarily recruited to respond to joint limitation and/or pain in motion. They do so by firing in a compensatory fashion to splint and brace as a protective mechanism to prevent further injury. By combining these measures, as suggested by Floyd and Silver [12], and Geisser [26], sensitivity, and specificity were improved significantly. Secondly, there are many patients who display an excellent range of motion (e.g. yoga instructor) where range of motion is not reduced significantly even in the presence of muscle guarding and pain. (I know there is some stuff in the AMA guides perhaps even the 6th edition on spasm).

The simultaneous graphing of motor recruitment along with graphed range of motion allows the clinician to determine if what appears to be a normal range of motion, is simply a false negative finding. John Gerhardt tested the DynaROM on over 500 patients (private communication Marcarian) and concluded that range of motion itself was not sensitive enough to differentiate actual pain from soft tissue injury, ultimately allowing symptom magnifiers to present as abnormal. The DynaROM provided a more accurate view into the patient's pain as well as motion difficulties, and in turn helped in formulating clinical hypotheses and appropriate treatment.

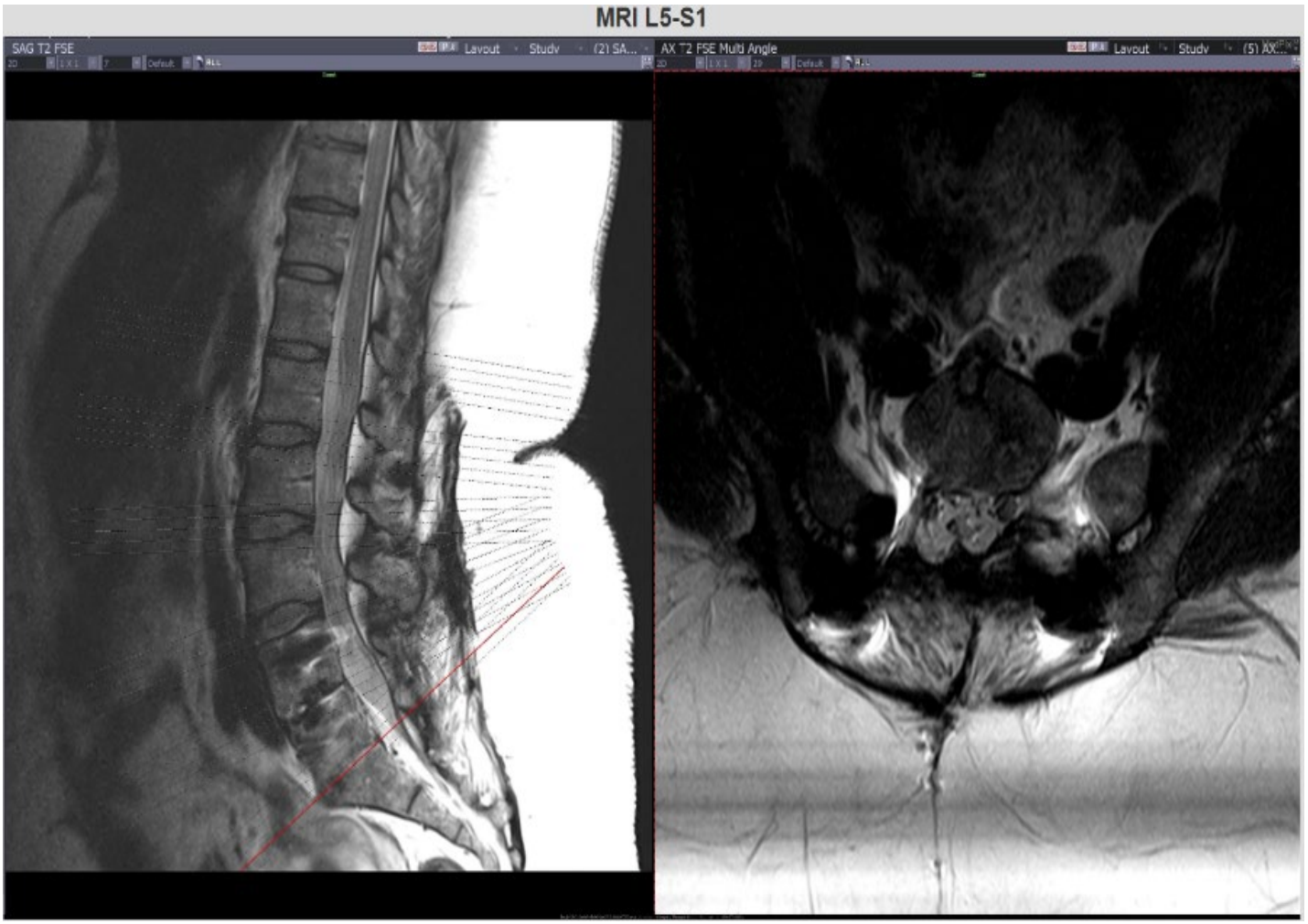
The final advantage of the DynaROM principle was the graphing of the patient's range of motion. The graphs helped show "quality of motion" as a patient "ratcheting" while moving indicates difficulty in performing motion. End point range of motion simply lacked the data to provide an objective view of this and was only observed by the practitioner.

What I would like to share with you is a case published through NIH and where you can simply click the link:

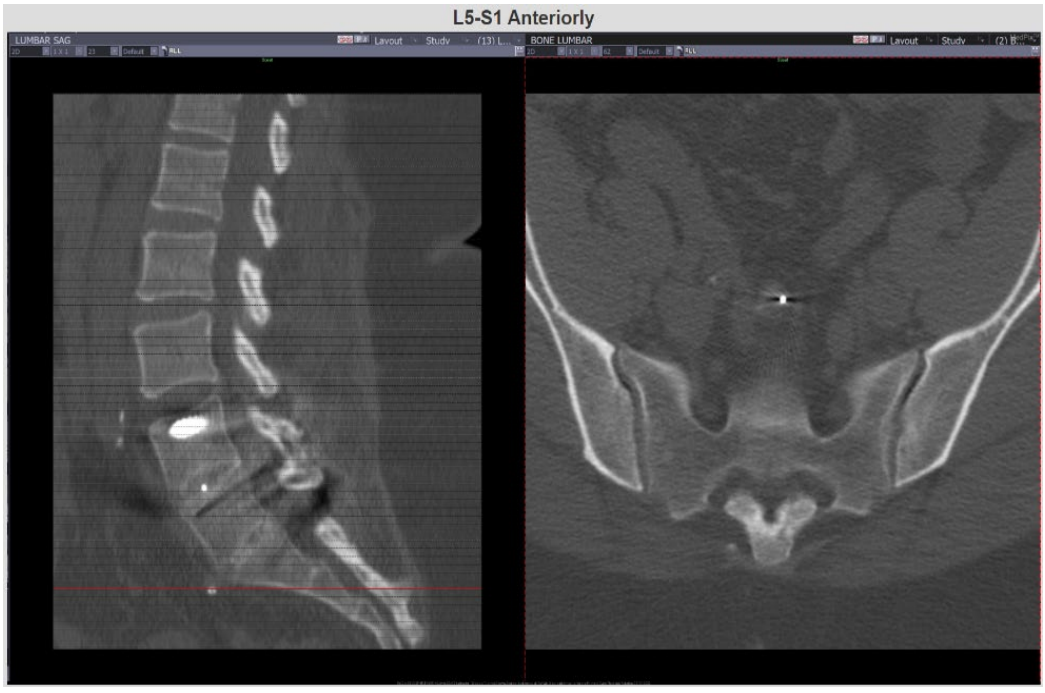
Greg Brown MS III, James Cox DC,Frank Mascaro MD, Randall Loftus MD, Joanna Garvey DC, Carol Jackson-Gibson MD,Samantha Wilfong DC, Gary Smith DC, David Marcarian MA, John Strom DC, Mark Studin DC, Joseph Serghany MD, Jennifer Sperrazza DC, Geoffrey Gerow DC. "Post-Laminectomy Syndrome, Failed Back Surgery Syndrome; Chronic L5-S1 Radiculopathy". Medpix: National Institute of Health/National Library of Medicine. Published March 27, 2022.

https://medpix.nlm.nih.gov/case?id=a5a819de-ae98-40d8-acb2-f3d091632f91
https://www.researchgate.net/publication/361776693_Post-Laminectomy_Syndrome_Failed_Back_Surgery_Syndrome_Chronic_L5-S1_Radiculopathy

Here we see is a post-surgical lumbar spine on MRI:



Here we see is a post-surgical lumbar spine on CT:



We have findings of Right Chronic L5-S1 Radiculopathy:

Monopolar Needle EMG

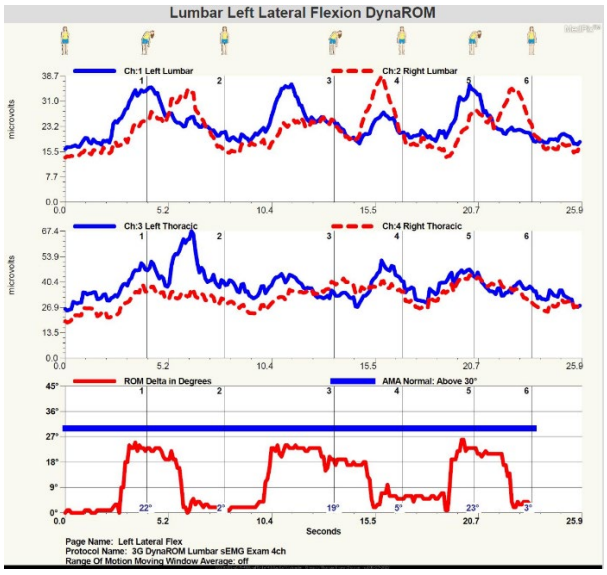
EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	**Incr**	**>12ms**	**2+**	**Reduced**	Nml	
Right	Peroneus Long	Sup Br Peron	L5-S1	Nml	Nml	Nml	**Incr**	**>12ms**	**2+**	**Reduced**	Nml	
Right	Gastroc	Tibial	S1-2	Nml	Nml	Nml	**Incr**	**>12ms**	**2+**	**Reduced**	Nml	
Right	Ext Dig Brev	Dp Br Peron	L5, S1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	Lumbar Parasp	Ram	L1-S1	Nml	Nml	Nml						

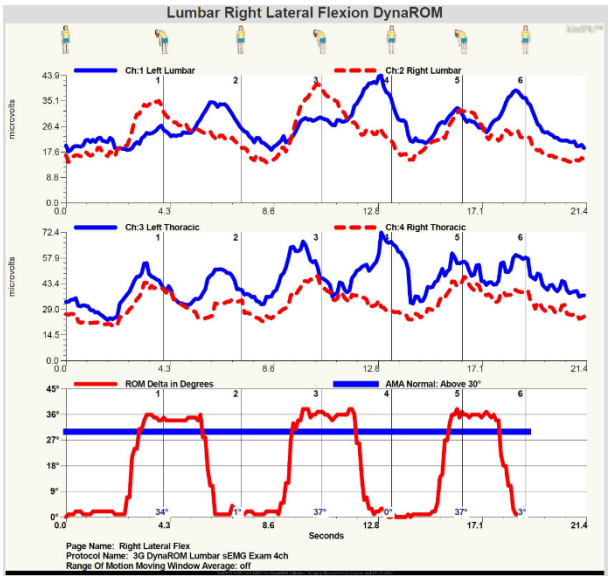
On lateral bending evaluation we have a loss of disc narrowing at L3/L4 on the right compared to the motion noted on the left.

We can use ROM-sEMG evaluation (Myovision.com) to understand and support the physiological dynamics with graphical understanding over time of the range of motion obtained. See below:

LEFT LATERAL BENDING



RIGHT LADERAL BENDING



To understand this case, we correlate the findings of various testing and account for the positioning and resultant effect of the findings on imaging. In this case, there is a lack of lateral bending to the side of radiculopathy which is not all that surprising.

ROM-sEMG (DynaROM) permits us the ability to explain and document the loss of function noted. [26-32]. It allows us the ability to understand Range of Motion of the spine as being a **reliable indicator**, useful in defining impairment as Dr. Gerhardt intended.

The actual calculations are performed in the publication [33] and can be perused.

The patient received Cox table/technique [34] for the cervical and lumbar spine regions. This a gentle decompressive mobilization/adjustment for relieving biomechanical and subsequently neuromusculoskeletal symptoms. The patient tolerated the treatment well and such has contributed to patient's recovery.

If you would like to learn more about this type of approach to spinal disability/impairment pathology, I would encourage you to send me your email address and just say "interested" at gjgerow@buffalo.edu. We, David Marcarian and I, may be able to run a CME session with credits provided by the University of Buffalo Medical School through Zoom presentation. Let me know the interest level and I will put together a presentation and invite those interested. Additionally, when we have a date, I will ask Dr. Anchor to put the offer out via ABDA email.

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The American Board
1483 N. Mt. Juliet Road #175
Mt. Juliet, TN 37122
Tel: 629-255-0870
Fax: 615-296-9980
Email: office@eventsm3.com

URGENT

2023 ANNUAL RENEWAL

Form on page 5

Due January 10, 2023