Certification of Impairment

Impairment Rating Examination

Patient: Injured Patient - Spinal Cord Injury
Slip and Fall - Employer Industrial Injury

1-1-2019

Performed By:

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Requested By:

Satisfied Counselor, Attorney at Law
First, Second, and Last, PC
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Patient: Injured Patient Date: 1-1-2019

To: Requesting Attorney, PC
28 28th Street, Suite 150
Ogden, Utah 84400
O: 801-801-8018
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Re: Injured Patient
DOB: 1/1/1900

Certification of Impairment

Conclusions:

Mr. Patient's history of injury, treatment history, and current physical condition have led to the following permanent impairment rating calculations:

- 87% present whole person impairment
- 15% apportioned to the prior impairment
- 73% apportioned to the industrial injury which occurred on January 17, 2013.

Parameters:
The following resources were utilized to calculate this impairment rating:

1. *Utah Labor Commission 's Supplemental 2006 Impairment Rating Guides*
2. *AMA Guides to the Evaluation of Permanent Impairment, 5th edition*

Details about how the impairment rating was calculated are discussed in the body of this report. Please see *form 3.4b 2006 Utah's Form for Computing Surgical Spinal Impairments - Schedule II*. It is the first attachment at the end of this report.

History of Injury:

Mr. Patient, who is a 61 year-old bus driver, presented to the Rocky Mountain Clinic on September 23, 2014 for an impairment evaluation and rating. He reported during the initial consultation that he had been to see his primary care physician, Tom Primary, MD, for a regular check-up when Dr. Primary noticed that Mr. Patient was dragging his left foot. Dr. Primary referred Mr. Patient to a neurologist who diagnosed severe spinal canal stenosis and cord compression. Mr. Patient was referred to Dr. Neurosurgeon (a neurosurgeon) and surgery was performed. Full resolution of symptoms was noted in the medical records, and Mr. Patient returned to work with no restrictions.

Eight months later, Mr. Patient arrived to work (on the morning of January 17, 2013) and proceeded to walk from his car to the building when he slipped on ice. He reported that his feet came out from under him and he landed on his upper back, neck, and head. He thinks he was knocked unconscious. In the ensuing week, neurological symptoms progressively worsened and it was discovered that the fall had resulted in fracture and disruption at the site of the previous surgery. Revision surgery was necessary.

Mr. Patient did not fully recover from the slip and fall injury. He is constrained to spend most of his time in a motorized wheel chair, and he requires round the clock assistance for all of his activities of daily living including washing, cooking, and even going to the bathroom.

Past Medical and Social History:

Family History:
Heart Disease (both sides of his family); Cancer (maternal - type: lung (she was a smoker); His sister had a stroke;

Social History:
Mr. Patient is married with two children. He has been married since 1976. He reports that he no longer enjoys any of his old hobbies due to his disabling condition. His hobbies were out door in nature - such as hiking. He used to smoke - quit in 2007. He is reliant upon social security disability because he can no longer work.

Review of Systems:
Mr. Patient had a heart attack a few years ago wherein a stint was put in; he is a type 2 diabetic, mostly def in the right ear (genetic), has slight incontinence and slow urination, can no longer stand and urinate due to leg weakness, 100% loss in sexual function, constipation (due to medications - he thinks), but he denies loss of bowel control or respiratory distress.

Past Surgeries:
Two neck surgeries (first: C4-C7 corpectomy, allograft, fusion; second: C4-C7 removal of old plate, revision of the strut graft, decompression of central canal (corpectomy and laminectomy), new plate, allograft, and posterior cervical fusion); Heart (stint); Ear surgery (they attempted to put a prosthesis in, but it didn't work); Tonsilectomy as a child;

Current Medications:
OTC - he states that he will take 3 Acetaminophen and 3 Ibuprofen before trying to go to sleep; he says that once in a while he takes Trazadone; he used to take Celexa and Lisinopril but hasn't had insurance, so he doesn't take them anymore (he says that the Celexa didn't really help anyway);

Activities of Daily Living:

Mr. Patient reported the following changes in his activities of daily living as a result of this injury:

- Unable to walk without a walker and ability to walk with the walker is very limited - mostly, uses

a motorized wheelchair to ambulate
- Unable to cook
- Unable to go to the bathroom alone
- Unable to sleep in a bed or lie down
- Unable to take a shower alone - his wife has to help him; hasn't taken a bath since he fell because he can't lie down
- Unable to hold arms above head long enough to wash his hair (it is easier to hold right arm up than it is the left - but still can't hold it up long enough to wash his hair)
- 100% disabled so that he cannot work - currently he is on social security disability
- 100% loss in sexual function
- Frequently drops things, especially with his left hand
- For further details, please review the functional capacity questionnaires attached to the end of this report.

Mr. Patient made the following statement about his activities of daily living:

- "I wish I could turn back the clock... mostly for my family. My wife and kids say it is okay, that they don't mind taking care of me, but I know it must get old for them. My son had to quit his job to come and take care of me."

Examination

Vital Signs:

Height:	Unable to measure - reported 68" preinjury	Blood Pressure:	171/87 left arm - seated
Weight:	Unable to measure - reported last weighed in at 210 lbs (2 weeks ago)	Pulse:	63 bpm

General Appearance:

Body Type:	Slightly Overweight	Attitude:	Cooperative
Appearance:	Clean, groomed	Posture:	Significant anterior head carriage - mostly confined to the wheelchair
Emotion:	Solemn		
Handed:	Right	CN: (2,3,4,5,6,7, 8,10, and 11)	• PERRLA • Cardinal Fields = normal • 0.07 monofilament sensory on face (three distributions) • Minimal facial expression • diminished hearing in right ear (reported) • patient is speaking • unable to shrug shoulders

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against gravity

Deep Tendon Reflexes:

Upper Extremities:

Triceps = 2+ bilaterally
Biceps = 1+ on the left; 2+ on the right
Brachioradialis = 2+ bilaterally

Lower Extremities:

Patellar = 2+bilaterally;
Achilles = 0 bilaterally;

0 = Absent with reinforcement
+ 1 = Hypoactive with reinforcement
+2 = Normal (sluggish or brisk may be used as descriptors)
+3 = Hyperactive
+4 = Hyperactive with transient clonus
+5 = Hyperactive with sustained clonus

Sensory: (monofilament testing)

Light Touch:

Trigeminal: (bilateral)	
1. Opthalmic -	0.07 grams
2. Maxillary' -	0.07 grams
3. Mandibular -	0.07 grams
Right Upper Extremity:	
C2 Dermatome: (ear lobes)	0.40 grams
C3 Dermatome: (anterior neck below jaw)	0.40 grams
C4 Dermatome: (anterior neck/trap jxn)	4.00 grams
C5 Dermatome: (lateral arm)	4.00 grams
C6 Dermatome: (thumb - distal phalanx)	0.40 grams
C7 Dermatome: (middle finger - distal)	0.40 grams
C8 Dermatome: (little finger-distal)	0.40 grams
T1 Dermatome: (medial forearm - cubital)	0.40 grams
Left Upper Extremity.	
C2 Dermatome: (ear lobes)	0.40 grams
C3 Dermatome: (anterior neck below jaw)	0.40 grams
C4 Dermatome: (anterior neck/trap jxn)	4.00 grams
C5 Dermatome: (lateral arm)	4.00 grams
C6 Dermatome: (thumb - distal phalanx)	0.40 grams
C7 Dermatome: (middle finger - distal)	0.40 grams
C8 Dermatome: (little finger-distal)	0.40 grams
T1 Dermatome: (medial forearm - cubital)	0.40 grams

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Light Touch:

Right Lower Extremity:

LI Dermatome: (above hip fold - seated position)	DNE
L2 Dermatome: (anterior proximal thigh)	2.00 grams
L3 Dermatome: (anterior middle thigh)	2.00 grams
L4 Dermatome: (arch of foot)	0.40 grams
L5 Dermatome: (between the first and second toes)	2.00 grams
SI Dermatome: (little toe)	4.00 grams

Left Lower Extremity:

LI Dermatome: (above hip fold - seated position)	DNE
L2 Dermatome: (anterior proximal thigh)	2.00 grams
L3 Dermatome: (anterior middle thigh)	2.00 grams
L4 Dermatome: (arch of fool)	2.00 grams
L5 Dermatome: (between the first and second toes)	2.00 grams
SI Dermatome: (little toe)	300 grams

0.07 grams = normal
0.40 grams = loss of light touch
2.0 grams = diminished protective sense
4.0 grams = loss of protective sense
300 grams = complete loss of touch

Static Palpation:

Severity Rating Scale-
- severity is rated on a scale of slight, moderate, severe, or extreme. This scale has been further subdivided to include a plus and minus option for each level of severity. For example: inter-spinous static tenderness might be labeled as moderate minus, moderate, or moderate plus depending on how
much pain is elicited during palpation. The same amount of pressure is applied at even.' level.

Another wav to think of it is to apply a number to each term - as demonstrated here:
slight minus = 1/10; slight = 2/10; slight plus = 3/10; moderate minus = 4/10; moderate = 5/10; moderate plus = 6/10; severe minus = 7/10; severe = 8/10; severe plus = 9/10; extreme = 10/10.

RSCC = Reproduces the Symptomatology of the Chief Complaint

- Sacroiliac Joints:
  - Bilateral SI joint = moderate minus

Midline Spinal Tenderness: (Full Spine)
- L5 to L4 = moderate minus
- L1 to T12 = moderate minus

o T9 to T7 = moderate minus
o T3 to T1 = moderate
o C7toC2 = moderate plus

- Muscle Guarding: (Full Spine - palpated with patient in seated position - in wheel chair)
  o Right gluteus medius = moderate minus
  o Left Internal and External Obliques = moderate minus
  o Right Internal and External Obliques = slight plus
  o Left Lumbar Paraspinal (adjacent to L5-L3 = moderate minus
  o Bilateral Dorsal Paraspinals (T12-T1) = moderate
  o Bilateral Posterior Scalenes and Cervical Paraspinal (C7 - C2) = severe minus

Range of Motion / Movement:

Spine:

- Visual Inspection - Cervical Spine
  o All Ranges were restricted and reported to be painful

- Measured Range of Motion with coupled dynamic surface EMG:

Range of motion measurements were obtained utilizing Precision Biometric's physio-monitoring equipment in accordance with AMA guidelines. Both inclinometers were calibrated just before measurements were taken. Warm-up exercise instructions were provided before measured evaluation was performed. The patient was instructed to perform three motions prior to measuring. Three motions were then measured in succession for validity. Dynamic surface EMG was obtained simultaneously. The patient was thoroughly instructed as to the importance of isolating the areas during each of the motions so that accurate measurements could be obtained. Patient acknowledged that he understood the instructions and was cooperative throughout all parts of the examination. Landmarks utilized include: the T1 spinous process, comer of eye, upper ear attachment, and calvaria of the head. Please review the attached range of motion and dynamic sEMG graph in conjunction with this section.

SFTR Measurements: (the neutral-zero method of measurement was utilized)
Cervical Spine:
S: 06-0-13
F: 22-0-15
R: unable to measure with dual inclinometers because Mr. Patient could not lie supine
Rotation was observed visually (both actively and passively) and was severely restricted. Loss in both left and right rotation was estimated to be 75 degrees. A value of 75 degrees was used to calculate cervical impairment using the ROM method.

50 degrees Extension = normal; 60 degrees Flexion = normal
45 degrees of Left and Right Lateral Flexion = normal
80 degrees of Left and Right Rotation = normal

Visual Inspection - Lumbar Spine:
We were unable to obtain this measurement because Mr. Patient was not able to stand long enough to complete even one repetition in a given lumbar range of motion. We were also unable to measure lumbar motion.

- Motion Palpation: (Cervical Spine - only)
  All levels were significantly restricted with reported pain. Note that the posterior fusion and laminectomy significantly altered the bony structure (landmarks) so that identification of the level
  of motion palpation was unreliable.

> Dynamic sEMG: (Cervical Spine - only)
  - o Abnormal
  - o See attached report
    - o Muscle guarding and irritation/fasciculation consistent with surgical fusion

Upper Extremities: (measured utilizing J-Tech computerized goniometry)
- Gleno-humeral joint = all ranges were diminished bilaterally except extension
- Elbows = slightly diminished bilaterally
- Wrists = bilateral wrist flexion and ulnar deviation were diminished bilaterally (right slightly more diminished than left) while bilateral wrist extension and radial deviation normal or greater than normal ROM.

- See attachments in the section labeled *ROM and dynamic sEMG* for graphs and measurements related to the upper extremity.

Muscle Testing:

- Manual Muscle Testing
  - o Left side was significantly weaker than the right in both the upper and lower extremities

- Computerized Muscle Strength Testing: (J-Tech computerized dynamometry)
  - o Left hip flexion, knee extension, and ankle plantar flexion were approximately 30% weaker than the right side
  - o Right dorsiflexion and great toe flexion were 20-30% weaker than the left
  - o Right great toe extension was 49% weaker than the left
  - o See attached report and graphs

Note:
- Validity and reliability of the patient's effort during muscle strength testing was evaluated using coefficients of variation (CV). Consistency and maximal effort are usually indicated by successive repetitions falling below 15% variation; however, in the case of Mr. Patient, high variability in the CVs was noted and demonstrated lack of endurance due to severe muscle weakness and fatigue with repetitive activity. The variable CVs must be analyzed in conjunction with the shape of the force duration curves to understand the finding.

- Grip Strength Testing
  - O <u>5 - Position Grip Strength Test</u>
    Testing was performed in the seated position, feet flat on the floor, arm unsupported, elbow flexed to 90 degrees, and the gauge facing away from the patient.

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5-Position Max Grip Test

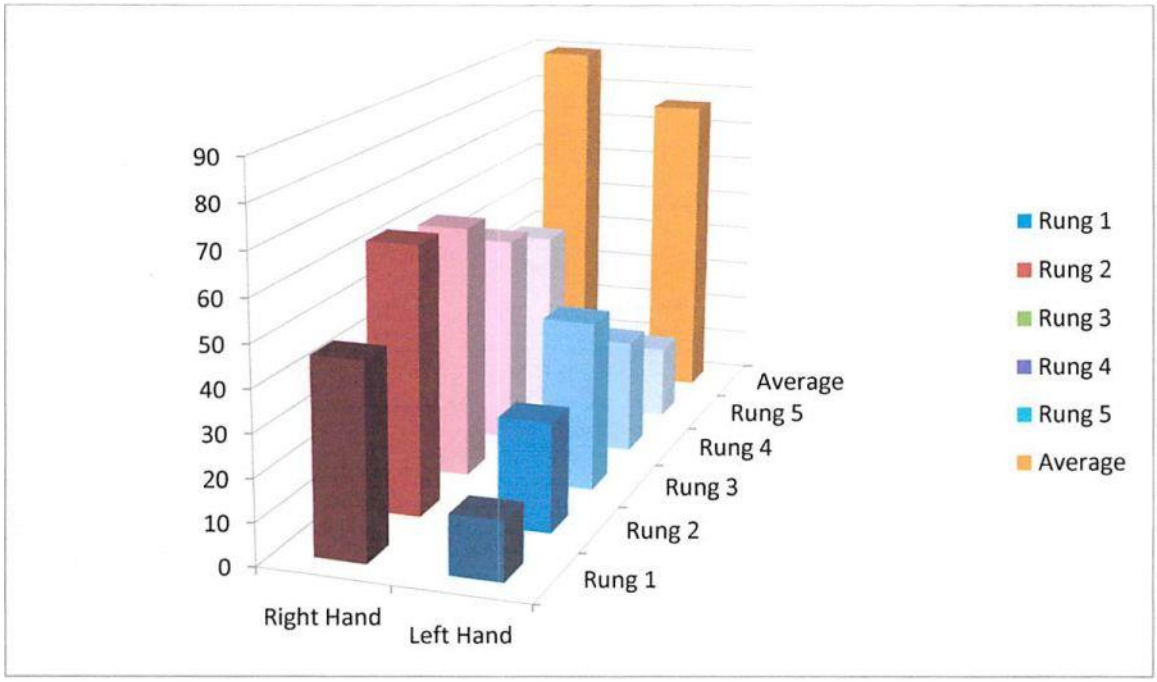
Rung Position:

	Left			Right		% Diff
1	14			46		61%
10	13	18				
2	26			64		60%
33	25	21				
3	41			61		33%
45	40	39	70	58	55	
4	28			51		45%
17	28	21	55	45	52	
5	18			45		60%
19	15	19	51	40	44	

Computation:
There is an average difference of strength between the left and right hands of 52%.

The left and right bell curves on the following graph demonstrate valid consistency and effort.

Figure 1



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An average deficit on the left measured 52% during the 5-Position Grip test. Normative data for Mr. Patient's age group demonstrated the following:

		Men				
Age	Hand	Mean	SD	SE	Low	High
60-64	Right	89.7	20.4	4.2	51	137
	Left	76.8	20.3	4.1	27	116

Conclusions:

Mr. Patient's strongest grip strength on the right measured 15 pounds less than the average grip strength in his age group; his strongest grip strength on the left measured 32 pounds less than the average grip strength in his age group.

Reference: Normative data from *Mathoiwetz et al. Grip ami Pinch Strength: Normative Data for Adults (1985).*

Rapid Exchange Grip Testing

The Rapid Exchange Grip Test was used to help evaluate the patient's level of effort. Because of the minimized time for muscle recruitment, forces generated during the REG should be comparable to values seen during a maximum grip test performed at the same rung setting on the grip gauge. (Hildreth 1989, Stokes 1995, Westbrook 2002).

The cutoff level selected for REG test validity was 100% of the 5 position grip maximum (Hildreth, 1985). Based on the cutoff value for the REG test, the 5-position grip test was valid on the right side, but not on the left; however, an REG measurement comparable to the 5-position grip was observed on rung 3.
Rung two and three are usually display the highest measurements across the population.

REG Testing - rung 2

Right Hand Threshold	64lbs	Left Hand Threshold	42 lbs
Right Hand Average (10)	51 lbs	Left Hand Average (10)	27 lbs

Notes and Observations

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Patient: Injured Patient

Date: 7 October. 2014

Actual REG Measurements:

	Left	Right	High
1.	50	35	
2.	54	20	
3.	51	40	
4- I	64	1 32	Left 64
5.	56	42	Right 42
6.	53	35	
7.	57	20	
8.	36	15	
9.	42	19	
10.	44	13	
Avg.	27	51	

Pinch Grip Strength Testing

The patient's pinch strength was evaluated with the Jamar pinch dynamometer to objectively quantify maximum pinch strength and identify hand weakness.

Pinch Grip Test	Side	Result	Avg Norm	% Diff	% Norm	SD
Tip	Right	6.1 lbs	15.8	61%	39%	3.9
Tip	Left	1 lb	15.3	93%	7%	3.7
Key	Right	12.2 lbs	23.2 lbs	47%	53%	5.4
Key	Left	5.6 lbs	22.2 lbs	75%	25%	4.1
Pinch	Right	8.4 lbs	21.8 lbs	61%	39%	3.3
Pinch	Left	3.6 lbs	21.2 lbs	83%	17%	3.2

Actual Pinch Grip Measurements:

		Left			right	
Tip	3	5.75	8	12	11.5	13
Key	0.5	0.75	2	5	5.5	7.75
Pinch	3.75	3	4	8.5	5.25	11.5

Conclusions:

Tip Test demonstrated considerable weakness bilaterally, left = 93% deficit; right = 61% deficit.

Key Test also demonstrated considerable weakness bilaterally: left = 75% deficit; right = 47% deficit.

Pinch Test also demonstrated considerable weakness bilaterally: left = 83% deficit; right = 61 % deficit.

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Orthopedic Testing: (perform the heel-toe walk exam)

1. Maximum Cervical Compression: negative for radiculopathy; however, only 5-10 degrees of cervical rotation was achieved and even light cephalic-caudal pressure was not well tolerated.

   Procedure:
   - Performed while the patient is in the seated position. Patient is instructed to approximate the chin to the shoulder and extend the neck. Pain on the concave side indicates nerve root or facet involvement. Pain on the convex side indicates muscular sprain.

2. Froment's Sian: Positive on the left

   Procedure:
   The patient attempts to grasp a piece of paper between any two fingers. Failure to maintain the grip when the paper is pulled away is a positive sign

Observations:
- Significant anterior head carriage was noted.
- Mr. Patient was consistently propping his head up with one hand or the other throughout the duration of the exam (he usually used his right hand) - he said he was propping his head up because holding it up with his neck aggravates his headache and neck pain; he said that he wasn't used to going so long without neck support.
- A midline posterior cervical scar was noted from C2 to T3. Two other scars were noted: one on the right scalp (temporal area), and another over the left trap adjacent to T1.
- Mr. Patient's right little finger continuously fasciculated indicating motor neuron damage.
- Lifting right arm to point during the sensory portion of the exam was reported to cause sharp pain in the shoulder.

Impairment Rating:

Mr. Patient's impairment rating was figured in three stages:

1st his total impairment was calculated,
2nd his prior impairment was calculated,
3rd apportionment was made by deducting the prior impairment rating from the present impairment rating.

According to criteria listed on page 34 (form 3.4b) of the *Utah Labor Commission's Supplemental 2006 Impairment Rating Guides*, Mr. Patient's impairment eligibility for the first surgical event was 15% whole person impairment. This number is the same as the prior impairment value. Please refer to the attached form 3.4b for details about the 15% pre Januaiy 17,2013 rating.

According to that same form (3.4b), Mr. Patient was eligible for an additional 10% impairment due to the second surgical procedure. These two values were added for a total present impairment value of 25%
whole person impairment as it pertains to surgical intervention in the cervical spine.

For comparison, the *AMA Guide's* range of motion method was utilized to calculate Mr. Patient's present impairment rating (as it pertains to surgical intervention). The Utah impairment rating method assigned a value of 25% whole person impairment while *iheAMA Guide's* Range of Motion method assigned a value of 25.2%. These values are comparable and, therefore, a level of validation was added to the 25% whole person impairment assigned according to the *Utah Supplemental Guides.* For further details about how the ROM value was calculated, refer to the attached Cervical Range of Motion (ROM) form under the *AMA Guides ROM Method* tab at the end of this report.

Please note that the *AMA Guide's* ROM form is optimized for manual goniometiy measurement; however, computerized goniometry measurements were taken. Mathematical operations were performed by the computer. Dynamic sEMG was performed simultaneously with dual inclinometiy which has been demonstrated to render more accurate range of motion measurements, validate the patient's level of effort, and objectively measure muscle guarding (if present).

Impairment due to spinal cord injury was calculated next utilizing Table 15-6 on pages 396 and 397 of the *AMA Guides to the Evaluation of Permanent Impairment, 5th edition.* Mr. Patient met criteria in 4 out of 7 of the categories list in table 15-6, including;

1. Rating Impairment of Two Upper Extremities
2. Rating Impairments Due to Station and Gait Disorders
3. Rating Neurologic Impairment of the Bladder
4. Rating Neurologic Sexual Impairment

Category 1, Rating Impairment of Two Upper Extremities, is divided into 4 classes. Mr. Patient met criteria described under class three which is eligible for 40-79% whole person impairment. Mr. Patient retains some use of his arms (right more than left), but not enough to wash his own hair. Also, it was taken into consideration that Mr. Patient must use one arm to hold his head up because his neck cannot endure the task. This effectively eliminates the functionality of one arm at least part of the time. Mr. Patient was assigned a value of 60% whole person impairment according to this category.

- 60% whole person impairment

Category 2, Rating Impairments Due to Station and Gait Disorders, is divided into 4 classes. Mr. Patient met the criteria for class 3 which is eligible for 20-39% whole person impairment. Mr. Patient was unable to stand for more than 30 seconds during the examination, and he was unable to walk. Also, he reported that he is unable to stand long enough to urinate; he has to sit down, and he isn't strong enough to get back up when he is finished. He must have assistance to perform this basic life function and he relies upon a motorized wheel chair for ambulation. He was assigned the full value of 39% whole person impairment in this category.

- 39% whole person impairment

Category 3, Rating Neurologic Impairment of the Bladder, is divided into 4 classes. Mr. Patient met the criteria listed under class 1 which is eligible for 1-9% whole person impairment. Mr. Patient experiences intermittent incontinence, but maintains some degree of voluntary control over urination. He was assigned a 5% whole person impairment rating according to this category.

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- 5% whole person impairment

Category 4, Rating Neurologic Sexual Impairment, is divided into 3 classes. Mr. Patient met the criteria listed beneath class 3 which is eligible for 20% whole person impairment. Mr. Patient reported a 100% loss in sexual function. He was assigned the full 20% whole person impairment allowed in this category.

- 20% whole person impairment

These 4 values were combined according to the Combined Values Chart (page 604 of the *AMA Guides to the Evaluation of Permanent Impairment, 5th edition)* for a total corticospinal tract impairment value of 82%.

The 82% neurological impairment was then combined with the 25% surgical impairment value for a total *permanent* impairment value of 87%.

The prior permanent impairment rating of 15% was then deducted from the 87% present permanent impairment rating, and die portion of Mr. Patient's present permanent impairment rating attributable to the work injury which occurred on January 17,2013 was found to be 72% whole person impairment.

- Total Impairment attributable to the industrial injury sustained on January 17,2013 = 72% WPI

I hereby affirm that the contents of this report are true and accurate according to the best of my knowledge. I certify that the subject's condition is permanent and stationary as required by the *Guides to the Evaluation of Permanent Impairment, fifth edition* for assignment of a permanent impairment rating.

Thank you for the referral of your client.

Regards,

X

Patrick Mickelsen, DC, DAAMLP

Functional Capacity Questionnaires

1. Copenhagen Neck Functional Disability Scale
2. Neck Bournemouth Questionnaire
3. Pain Disability Questionnaire
4. Quadruple Visual Analogue Scale

COPENHAGEN NECK FUNCTIONAL DISABILITY

SCALE

Patient Name Date _____

Please read carefully:

SYMPTOM	YES	OCCASSIONALLY	NO
1. Can you sleep at night without neck pain interfering?			
2. Can you manage daily activities without neck pain reducing activity levels?			
3. Can you manage daily activities without help from others?			**tx.**
4. Can you manage putting your clothes on in the morning without taking more time			*00*
5. Can you bend over the sink to brush your teeth without getting neck pain?			
6. Do you spend more time than usual at home because of your neck pain?			
7. Are you prevented from lifting objects weighting 5-10 pounds due to neck			
8. Have you reduced your reading activity due to neck pain?			
9. Have you been bothered by headaches during the time you have had neck			
10. Do you feel that your ability to concentrate is reduced due to neck pain?			
11. Are you prevented from participating in your usual leisure time activities due to [1]	V		
12. Do you remain in bed longer than usual due to neck pain?			
13. Do you feel neck pain has influenced your emotional relationship with your family?		V	
14. Have you had to give up social contact with other people during the past two weeks due to neck pain?			
15. Do you feel that neck pain will influence your future?	**4^**		

COMMENTS:

EXAMINER:

With permission from: Jordan, A, DC, Mannishc C, Mosdal, C, Hindsbcrgcr C. The Copenhagen Neck Functional Disability Scale: A Study of Reliability and Validity. *JMPT*, 1998; Vol 21, #8:520-27.

NECK BOURNEMOUTH QUESTIONNAIRE

Patient Name Date ᶜ\ ʳX^ᵓ 7.0^

Instructions: The following scales have been designed to find out about your neck pain and how it is affecting you. Please answer ALL the scales, and mark the ONE number on EACH scale that best describes how you feel.

1. Over the past week, on average, how would you rate your neck pain?

No pain Worst pain possible

0 1 2 3 4 5 6 7 8 9 10

2. Over the past week, how much has your neck pain interfered with your daily activities (housework, washing, dressing, lifting, reading, driving)?

No interference Unable to carry out activity

8 10

3. Over the past week, how much has your neck pain interfered with your ability to take part in recreational, social, and family activities?

No interference Unable to carry out activity

0 1 2 3 4 5 6 7 8 10

4. Over the past week, how anxious (tense, uptight, irritable, difficulty in concentrating/relaxing) have you been feeling?

Not at all anxious Extremely anxious

0 2 3 4 5 6 7 9 10

Over the past week, how depressed (down-in-the-dumps, sad, in low spirits, pessimistic, unhappy) have you been feeling?

Not at all depressed Extremely depressed

0 1 2 3 4 5 6 7 8 9 10

6. Over the past week, how have you felt your work (both inside and outside the home) has affected (or would affect) your neck pain?

Have made it no worse Have made it much worse

0 I 2 3 4 5 6 7 8 9 ifT

Over the past week, how much have you been able to control (reduce/help) your neck pain on your own?

Completely control it No Control whatsoever

1 10

OTHER COMMENTS:

Examiner

--£> - *too y*

With Permission from: Bolton JE, Humphreys BK: The Bournemouth Questionnaire: A Short-form Comprehensive Outcome Measure. II. Psychometric Properties in Neck Pain Patients *JMPT2002; 25* (3): 141 -148.

PAIN DISABILITY QUESTIONNAIRE

Patient Name _____ Date 6\ '^LOV^

Instructions: These questions ask your views about how your pain now affects how you function in everyday activities. Please answer every question and mark the ONE number on EACH scale that best describes how you feel.

1. Does your pain interfere with your normal work inside and outside the home?
Work normally Unablgjo work at^H
0 -------- 1---------- 2 ---------- 3 --------- 4---------5---------6---------- 7---------- 8 ----------

2. Does your pain interfere with personal care (such as washing, dressing, etc.)?
Take care of myself completely Need help with all my personal care
0 --------l---------- 2 ---------- 3 --------- 4---------5---------6---------- 7----------9---------- 10

3. Does your pain interfere with your traveling?
Travel anywhere I like .---3 Only travel to see doctors
0 -------- 1---------- 2 ---------- 3 --------- 4---------5---------6---------- 8 ----------9------- 10

4. Does your pain affect your ability to sit or stand?
No problems . CaanoMit/stand at all

5. Does your pain affect your ability to lift overhead, grasp objects, or reach for things?
No problems /O I Can not do at all
0 -------- 1---------- 2 ---------- 3 --------- 4---------5---------6---------- 7----------— 9 ---------- 10

6. Does your pain affect your ability to lift objects off the floor, bend, stoop,orsquat?
No problems Can not-d^at all

7. Does your pain affect your ability to walk or run? L—■*s*
No problems Can not wajJsMJnVrt all
0 -------- 1---------- 2 ---------- 3 --------- 4---------5---------6---------- 7---------- 8 ----------9---- 4 l o)

8. Has your income declined since your pain began? v
No decline ✓ — L o s t all income
0 --------l---------- 2 ---------- 3 --------- 4---------5---------6---------- 8----------9------- 10

9. Do you have to take pain medication every day to control your pain?
No medication needed On pain medication throughodtsthe day
0 -------- 1---------- 2 ---------- 3 --------- 4---------5---------6---------- 7---------- 8 ----------9---- -<£l0j

10. Does your pain force your to see doctors much more often than before your pain began?
Never see doctors /—^ See doctors weekly
0 --------l----------2---------- 3 --------- 4---------5---------6---------(7 4 — 8 ----------9------- 10

11. Does your pain interfere with your ability to see the people whoUFelmportant to you as much as you would like?
No problem —;v Never see them
0 -------- 1 --------- 2 ---------- 3 --------- 4---------5---------6---------- 7----------£- 8 -*4*—9---------- 10

12. Does your pain interfere with recreational activities and hobbies that are impfirtant to you?
No interference Total interference
0 -------- 1 --------- 2 ---------- 3 --------- 4---------5---------6---------- 7---------- 8 ----------9—-Q0)

13. Do you need the help of your family and friends to complete everyday tasks (including both work outside the home and housework) because of your pain?
Never need help Need helault^he time
0 -------- 1---------- **2** ---------- 3 --------- 4---------5---------**6**---------- 7---------- **8** ----------9---- **4** 10/

14. Do you now feel more depressed, tense, or anxious than before your pain began?
No depression/tension Severe depression/tension
0 -------- 1 --------- 2 ---------- 3 --------- 4---------5---------6---------- -OP-—[8] ----------[9] ------- [10]

15. Are there emotional problems caused by your pain that interfereWim your family, social and or work activities?
No problems Severe problems
0 -------- 1---------- 2 ---------- 3 --------- 4----------A5 -•/— 6---------- 7---------- 8 ----------9------- 10

Examiner '

OTHER COMMENTS:

With Permission from: Anagnostis C et al: The Pain Disability Questionnaire: A New Psychometrically Sound Measure for Chronic Musculoskeletal Disorders. *Spine* 2004; 29 (20): 2290-2302.

QUADRUPLE VISUAL ANALOGUE SCALE

Patient Name ___ Date *~\ T^S _____

Please read carefully:

Instructions: Please circle the number that best describes the question being asked.

Note: If you have more than one complaint, please answer each question for each individual complaint and indicate the score for each complaint. Please indicate your pain level right now, average pain, and pain at its best and worst.

Example:

Headache Neck Low Back

No pain worst possible pain

0 ~1 12 4 <3 6 7 (1) 9 10

1 - What is your pain RIGHT NOW?

No pain _____ worst possible pain

0 12 3 4 5 6 7 8 9 10

2 - What is your TYPICAL or AVERAGE pain?

No pain _____ worst possible pain

0 1 2 3 4 5 6 7 8 9 10

3 - What is your pain level AT ITS BEST (How close to "0" does your pain get at its best)?

No pain _____ worst possible pain

0 12 3 4 5 6 7 8 9 10

4 - What is your pain level AT ITS WORST (How close to "10" does your pain get at its worst)?

No pain _____ worst possible pain

0 1 2 3 4 5 6 7 1 \9) 10

OTHER COMMENTS:

•&uAr^sJL S&C.

Examiner

Reprinted from *Spine*, 18, Von Korff M, Deyo RA, Cherkin D, Barlow SF, Back pain in primary care: Outcomes at I year, 855-862,1993, with permission from Elsevier Science.

3.4b Form for Computing Surgical Spinal Impairments - Schedule II

Based on Functional, Anatomical, and Diagnostic Based Criteria

FOR COMPUTING SURGICAL SPINAL IMPAIRMENTS-SCHEDULEII BASEDONFUNCTIONAL, ANATOMICAL, and DIAGNOSTIC BASED PiTFERIAtFAP) Used for surgically treated spine conditions.				
Patient Name: Injured Patient	**Date:**	**10/07/2014**		
Injury Events		**Initial Event**	**Second Event**	**Third Event**
il-A. First minimally invasive spinal surgery such as a percutaneous or and endoscopic procedure done as an attempt to decompress a herniated disc, performed at one level in a given spinal region, for a significant disc abnormality. (Assigned one time per patient)	**5%**			
Il-B. Minimally invasive spinal surgery, performed at another level than the first in a given spinal region, for significant disc abnormality (one time per disc).	**2%**			
Il-C. First spinal surgery at one level in a given spinal region, including significant disc abnormality, posttraumatic changed, spondylolisthesis, instability, and spinal stenosis (includes foraminal stenosis). (Assigned one time per patient)	**10% (one time per patient)**	**10%**		
AdD-dNSfbr ScheduleIteA. (Whole Person)				
Il-D. Medically documented injury with continued pain, decreased motion, and imaging evidence of a 2nd herniation that displaces nervous tissue and has occurred from the same or subsequent injury at a different level than the first disc herniation and this 2nd disc space was treated either conservatively or surgically. This would also include surgery for posttraumatic changes, spondylolisthesis, segmental instability, and spinal stenosis. (This is applied only one time per level per patient and is not to be applied to levels explored, but not found to require partial discectomy or foraminotomy.)	**Add 3% (one time per level per patient)**		**3%**	
Il-E. Second or subsequent spinal operation (not to include minimal invasive surgical procedures) in a given spinal region, including herniated discs, spondylolisthesis, segmental instability, and spinal stenosis.	**Add 2% per operation**		**2%**	
Il-F. Spinal Fusions or placement of a single "artificial disc" (for the first level fused that spans 2 vertebrae).	**Add 3%**	**3%**	**3%**	
Il-G. Fusions or placement with an "artificial disc," additional level(s) (i.e., a fusion that spans 3 or more vertebrae). This is to be used only one time per level.	**Add 2%**	**2%**	**2%**	
Il-I. Minor procedures or operation, such as uncomplicated removal of internal fixation devices.	**0%**			
Add Impairment (Total Amount for Spine):		**15%**	**25%**	
Il-H. Neurological: Persisting Radicular Neurologic Deficit (If, after 6 months, the neurological deficits exceed 3% WP, then calculate the deficits as described using tables 15-15 and 15-16 modified from the AMA Guides 5th Edition, and combine the new radiculopathy rating, in place of the 3% listed here. [See Radiculopathy Schedule]	**3% Combined**		**82%**	
Total Impairment Value Without Apportionment:		**15%**	**87%**	
Apportionment:			**15%**	
Final Impairment Related to the Last Event:			**72%**	
Signature and Title of Physician doing Rating:		**>.—«»**		

Patrick Mickelsen, DC 10/10/2014

Range of Motion

1. Cervical (PBI Myovision)
2. Upper Extremities (J-Tech Medical)

Dynamic Surface Electromyography

Precision Biometric's Myovision

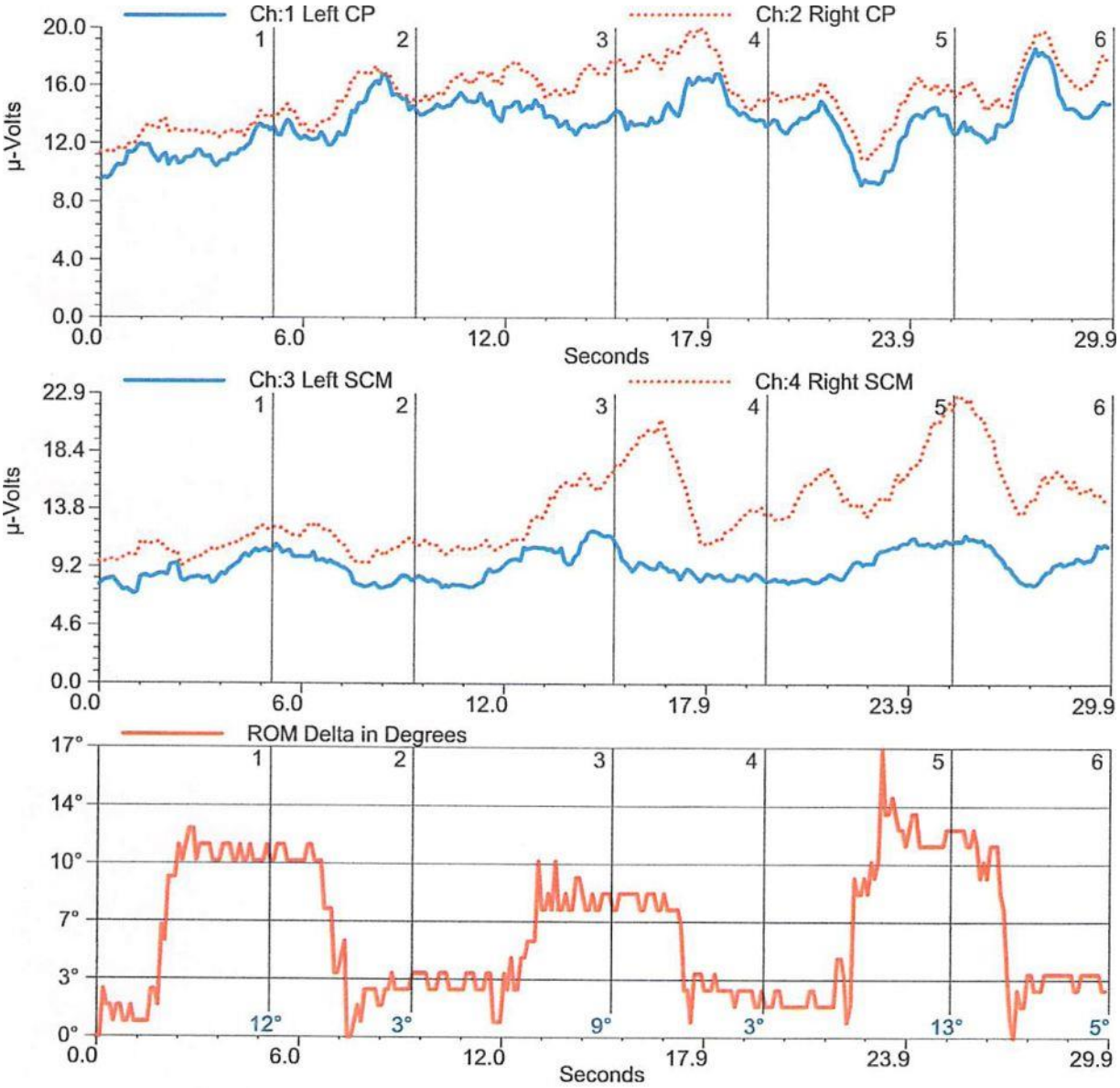
Muscle Strength Testing

J-Tech Medical Computerized Dynamometry

MyoVision Dynamic Report

Office Information:
Ogden Injury Clinic
Patrick Mickelsen, DC
2240 North HWY 89 Ste. D
Harrisville, Utah 84404
801-782-2947

Patient Information:
Patient: Injured Patient
ID: STOEDOOO
Exam Date: Sep 23, 2014 12:25:00 PM
Protocol Name: 3G DynaROM Cervical sEMG Exam

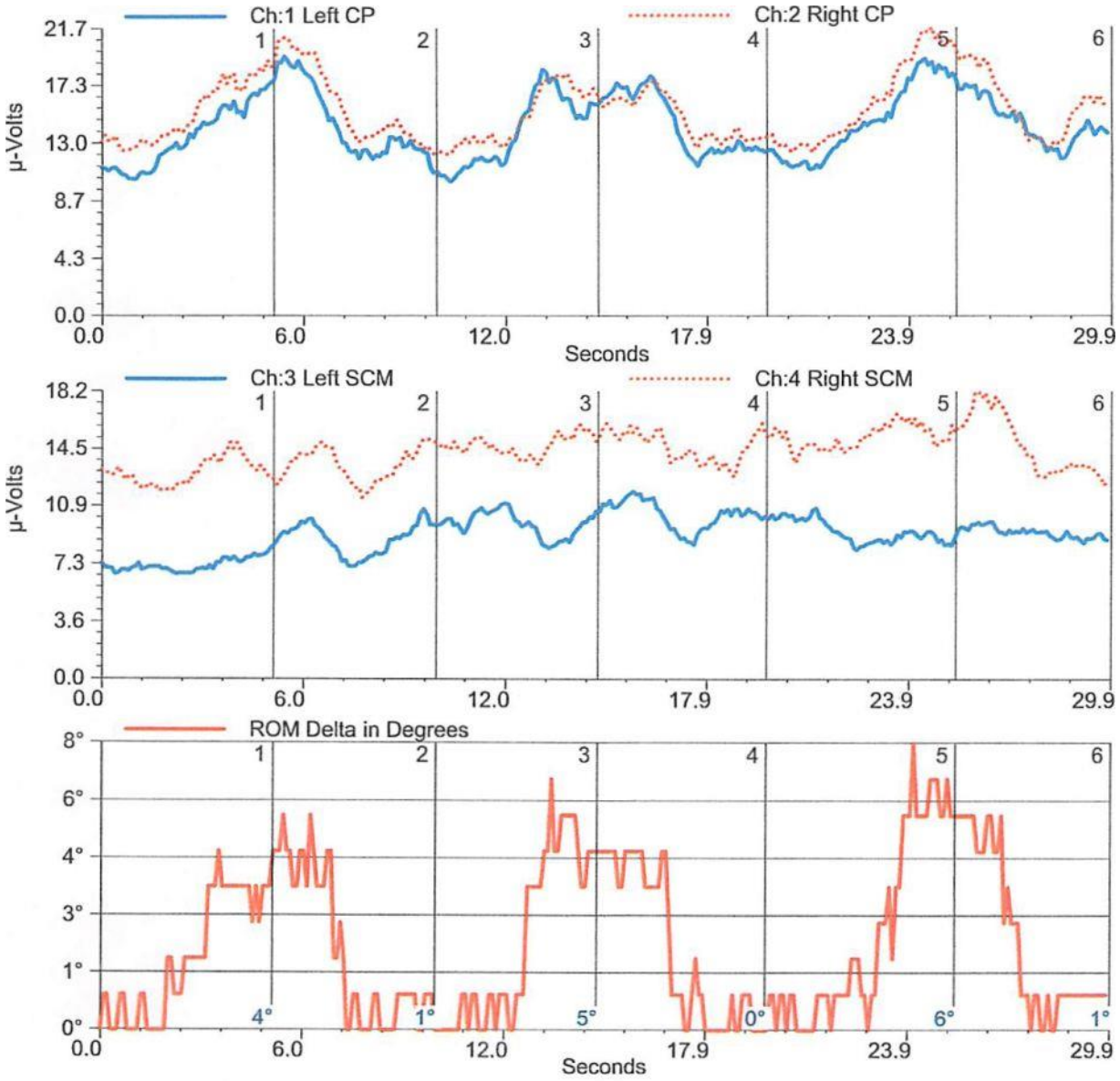


Protocol Name: 3G DynaROM Cervical sEMG Exam: Page Name: Flexion DynaROM sEMG

MyoVision Dynamic Report

Office Information:
Ogden Injury Clinic
Patrick Mickelsen, DC
2240 North HWY 89 Ste. D
Harrisville, Utah 84404
801-782-2947

Patient Information:
Patient: Injured Patient
ID: STOEDOOO
Exam Date: Sep 23, 2014 12:25:00 PM
Protocol Name: 3G DynaROM Cervical sEMG Exam

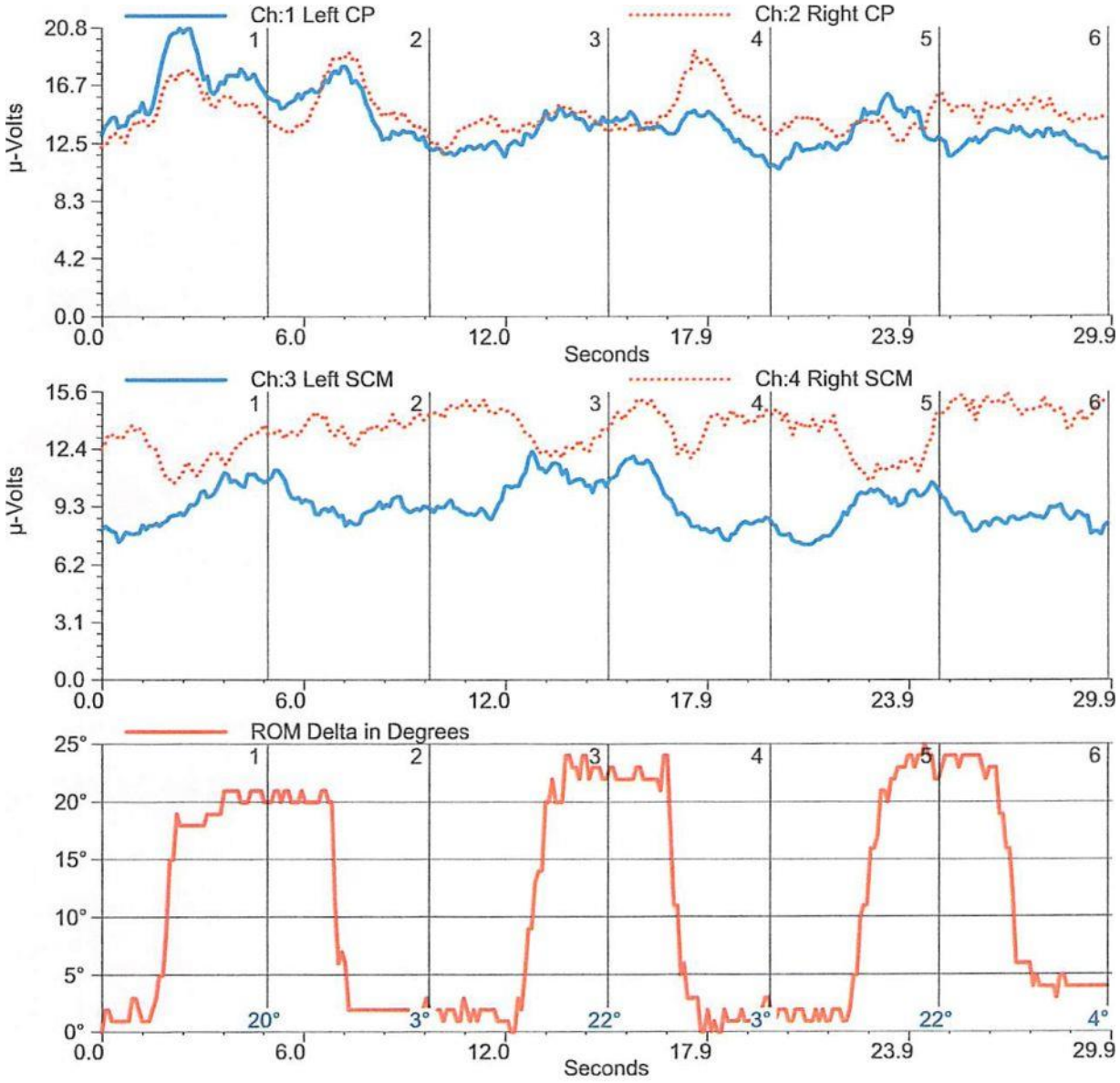


Protocol Name: 3G DynaROM Cervical sEMG Exam: Page Name: Extension DynaROM sEMG

MyoVision Dynamic Report

Office Information:
Ogden Injury Clinic
Patrick Mickelsen, DC
2240 North HWY 89 Ste. D
Harrisville, Utah 84404
801-782-2947

Patient Information:
Patient: Injured Patient
ID: STOEDOOO
Exam Date: Sep 23, 2014 12:25:00 PM
Protocol Name: 3G DynaROM Cervical sEMG Exam



Protocol Name: 3G DynaROM Cervical sEMG Exam: Page Name: Left Lateral DynaROM sEMG

MyoVision Dynamic Report

Office Information:
Ogden Injury Clinic
Patrick Mickelsen, DC
2240 North HWY 89 Ste. D
Harrisville, Utah 84404
801-782-2947

Patient Information:
Patient: Injured Patient
ID: STOEDOOO
Exam Date: Sep 23, 2014 12:25:00 PM
Protocol Name: 3G DynaROM Cervical sEMG Exam

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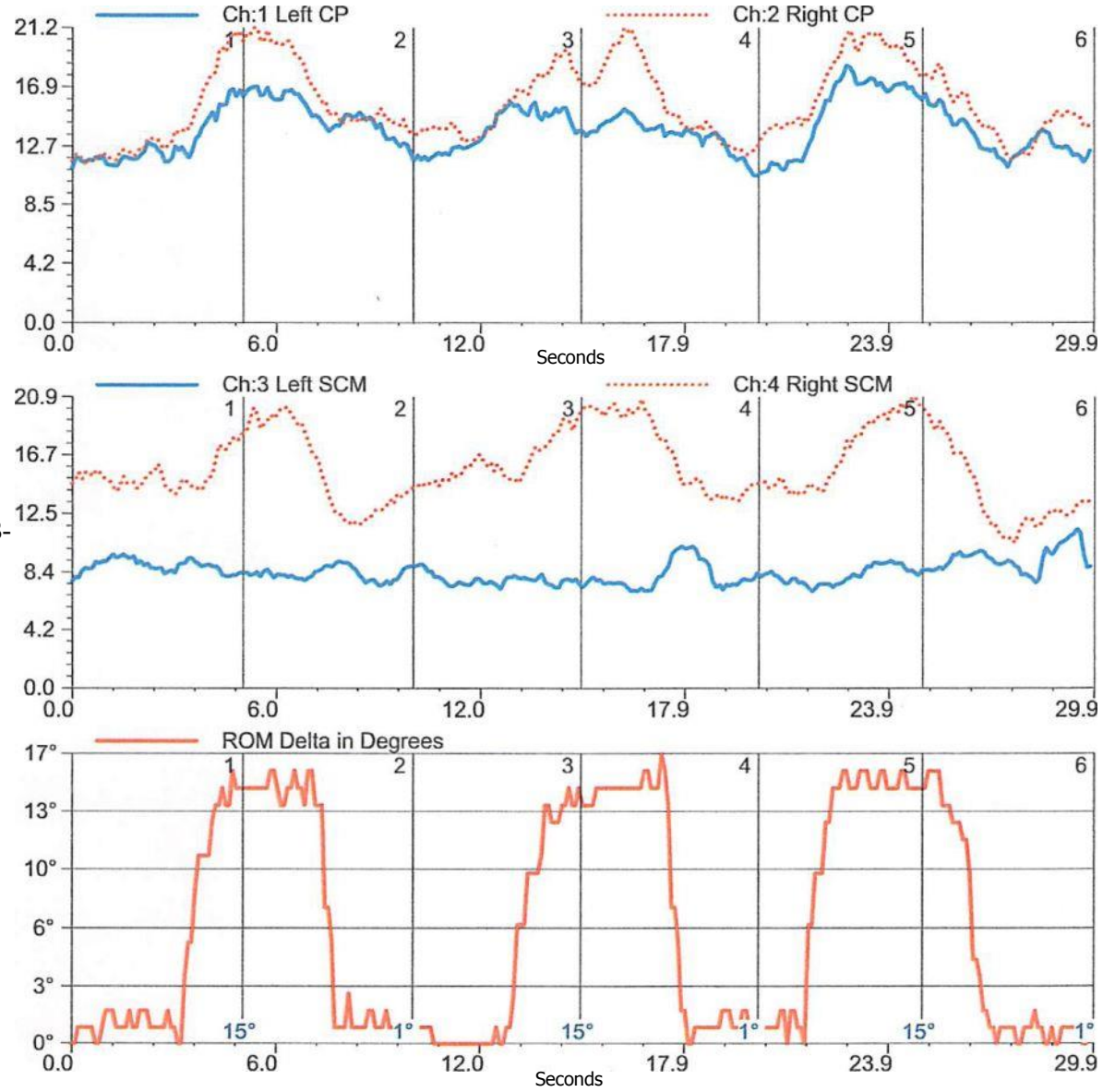

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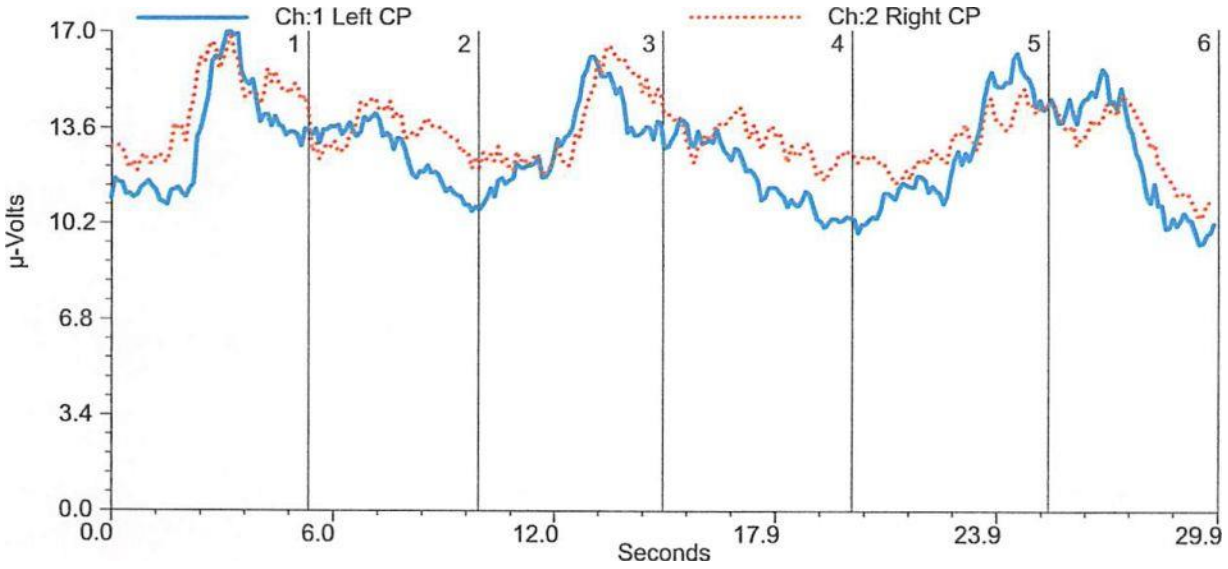
13-

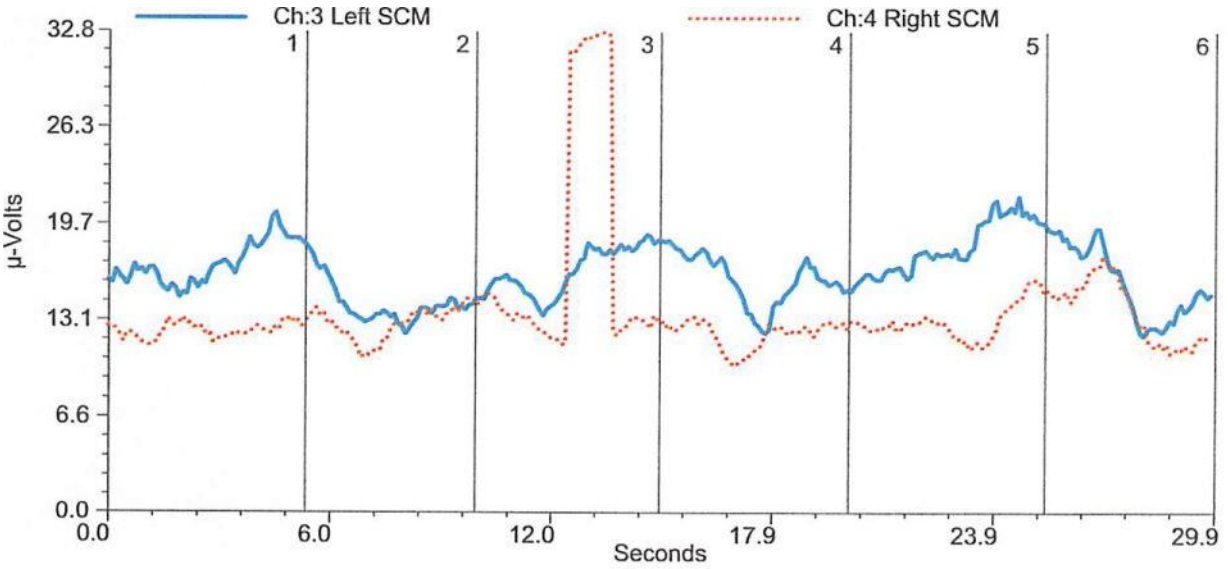
Protocol Name: 3G DynaROM Cervical sEMG Exam: Page Name: Right Lateral DynaROM sEMG

MyoVision Dynamic Report

Office Information:
Ogden Injury Clinic
Patrick Mickelsen, DC
2240 North HWY 89 Ste. D
Harrisville, Utah 84404
801-782-2947

Patient Information:
Patient: Injured Patient
ID: STOEDOOO
Exam Date: Sep 23, 2014 12:25:00 PM
Protocol Name: 3G DynaROM Cervical sEMG Exam



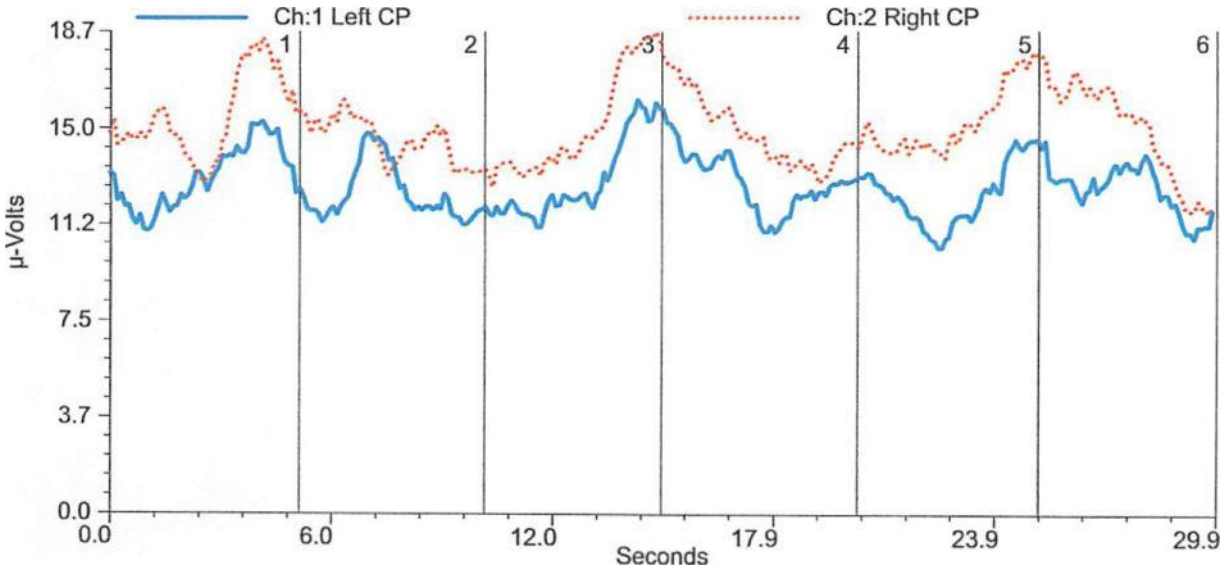


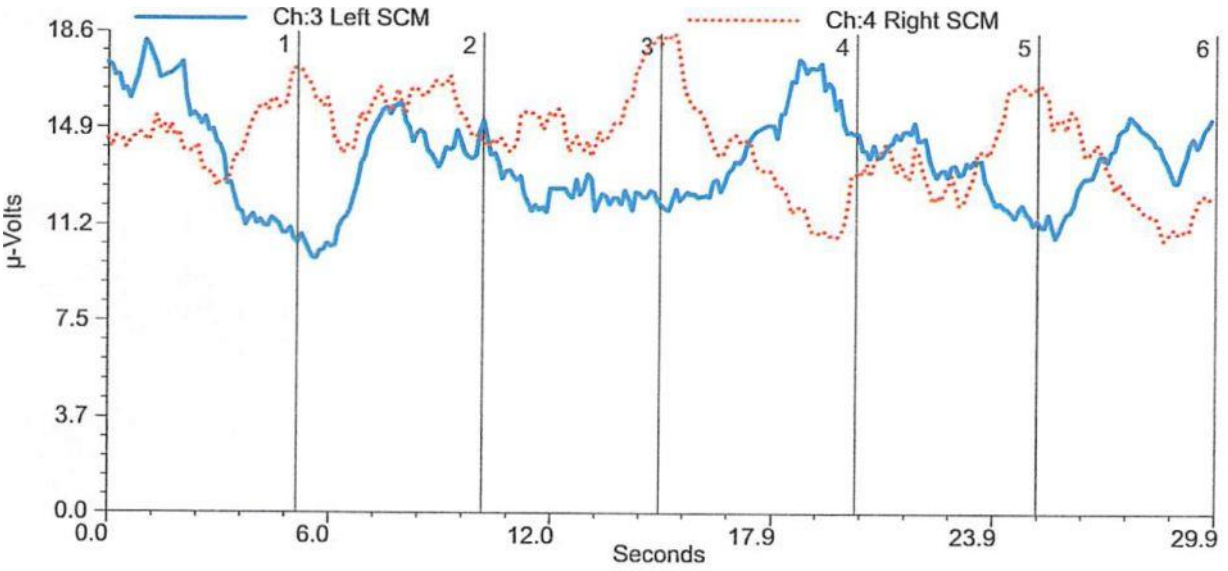
Protocol Name: 3G DynaROM Cervical sEMG Exam: Page Name: Left Rotation Dynamic sEMG Only

MyoVision Dynamic Report

Office Information:
Ogden Injury Clinic
Patrick Mickelsen, DC
2240 North HWY 89 Ste. D
Harrisville, Utah 84404
801-782-2947

Patient Information:
Patient: Injured Patient
ID: STOEDOOO
Exam Date: Sep 23, 2014 12:25:00 PM
Protocol Name: 3G DynaROM Cervical sEMG Exam





Protocol Name: 3G DynaROM Cervical sEMG Exam: Page Name: Right Rotation Dynamic sEMG Only

Patient Information

Name: Injured Patient
Address: 135 West Princeton Drive / Midvale, Utah 84047
Daytime Phone: 801-568-3661
Patient ID: STOEDOOO
Gender: Male
Dominant Hand: Right

Range of Motion - Goniometry

Upper Extremity Range of Motion

Range of motion (ROM) for the upper extremity joint motions indicated below were evaluated and compared to normative values published by the American Medical Association in the Guides to the Evaluation of Permanent Impairment, Fifth Edition.

Upper Extremity ROM - Left Active	Norm	Result	% Norm
Shoulder Flexion			54%
Shoulder Extension	50°	68°	136%
Shoulder Abduction		79°	44%
Shoulder Adduction	50°	30°	60%
Shoulder Internal Rotation	90°	46°	51%
Shoulder External Rotation	90°	52°	58%
Elbow Flexion	140°	137°	98%
Elbow Extension	0°	20°	-
Elbow Pronation	80°	64°	80%
Elbow Supination	80°	92°	115%
Wrist Flexion	60°	50°	83%
Wrist Extension	60°		137%
Wrist Radial Deviation	20°	25°	125%
Wrist Ulnar Deviation	30°	25°	83%

Upper Extremity ROM - Right Active	Norm	Result	% Norm
Shoulder Flexion		100°	56%
Shoulder Extension	50°	68°	136%
Shoulder Abduction	180°	100°	56%
Shoulder Adduction	50°	19°	38%
Shoulder Internal Rotation	90°	49°	54%
Shoulder External Rotation	90°	67°	74%
Elbow Flexion	140°	138°	99%
Elbow Extension	0°	19°	-
Elbow Pronation	80°	74°	93%
Elbow Supination	80°	95°	119%
Wrist Flexion	60°	45°	75%
Wrist Extension			135%
Wrist Radial Deviation	20°	22°	110%
Wrist Ulnar Deviation	30°	22°	73%

Wrist Flexion/Extension - Notes: Mr. Patient is getting very fatigued from the functional nature of this examination, but he wants to continue.

Muscle Strength Testing

Muscle Tests

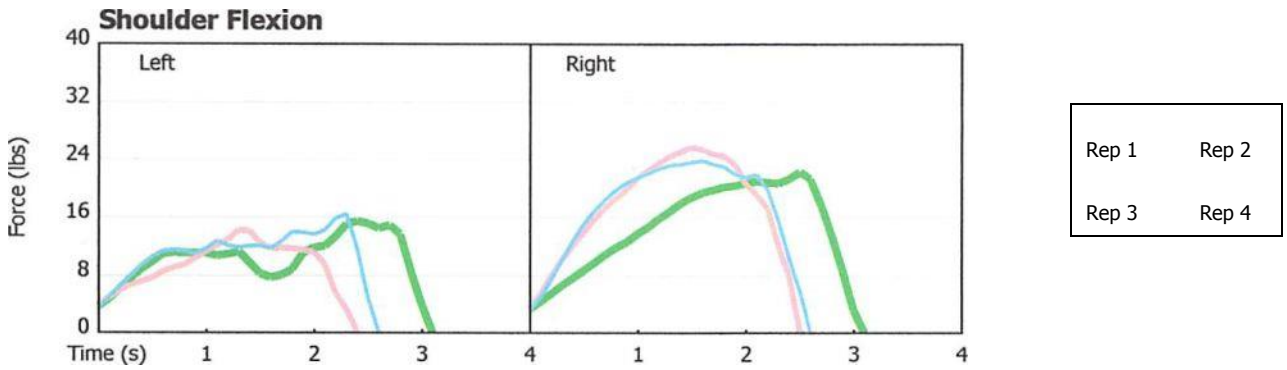
The patient was tested using the JTECH Tracker system, a computerized muscle strength evaluation system. When compared to the opposite side, a strength difference greater than 15% is generally recognized as an indication of motor deficit.

	Result		CV		
Upper Extremity Muscle Tests	**Left**	**Right**	**Left**	**Right**	**Difference**
Shoulder Flexion	16.4 lbs	25.7 lbs	6%	5%	-36% L
Shoulder Extension	17.4 lbs	35.5 lbs	10%	8%	-51% L
Shoulder Abduction	9.8 lbs	14.4 lbs	32%	1%	-32% L
Shoulder Internal Rotation	5.3 lbs	10.3 lbs	17%	2%	-49% L
Shoulder External Rotation	6.2 lbs	9.9 lbs	2%	13%	-38% L
Elbow Flexion (Forearm Neutral)	11.9 lbs	24.5 lbs	14%	5%	-51% L
Elbow Extension	13.6 lbs	20.7 lbs	10%	7%	-34% L

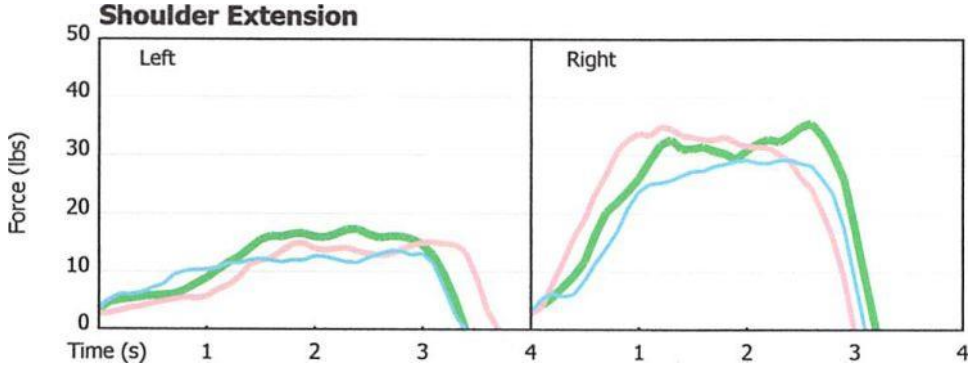
	Result		CV		
Lower Extremity Muscle Tests	**Left**	**Right**	**Left**	**Right**	**Difference**
Hip Flexion	8.5 lbs	28.7 lbs	52%	7%	-70% L
Knee Flexion (Leg Neutral)	6.5 lbs	22.2 lbs	3%	3%	-71% L
Knee Extension	12.8 lbs	31.6 lbs	10%	11%	-59% L
Ankle Plantar Flexion (Knee Flexed)	22.2 lbs	39.8 lbs	2%	5%	-44% L
Foot Dorsiflexion/Inversion	13.9 lbs	16.0 lbs	7%	7%	-13% L
Great Toe Extension	5.8 lbs	8.3 lbs	13%	9%	-30% L

Consistency of the patient's muscle strength was evaluated using coefficient of variation (CV) with consistency indicated by successive repetitions falling below 15%.

Graded Muscle Tests	**Left Grade**	**Right Grade**
Forearm Pronation	4	5
Forearm Supination	5	5

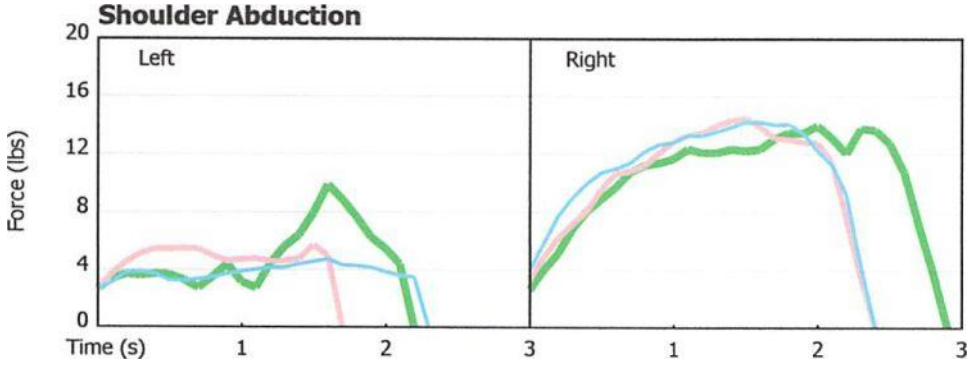


Shoulder Extension



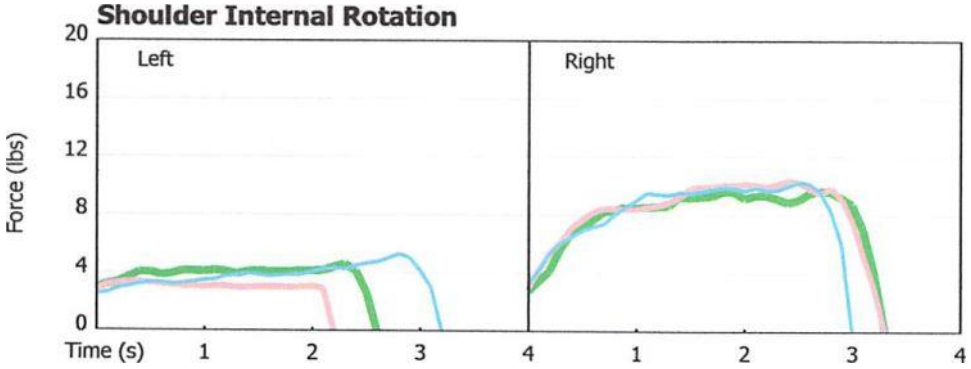
Rep 1	Rep 2
Rep 3	Rep 4

Shoulder Abduction



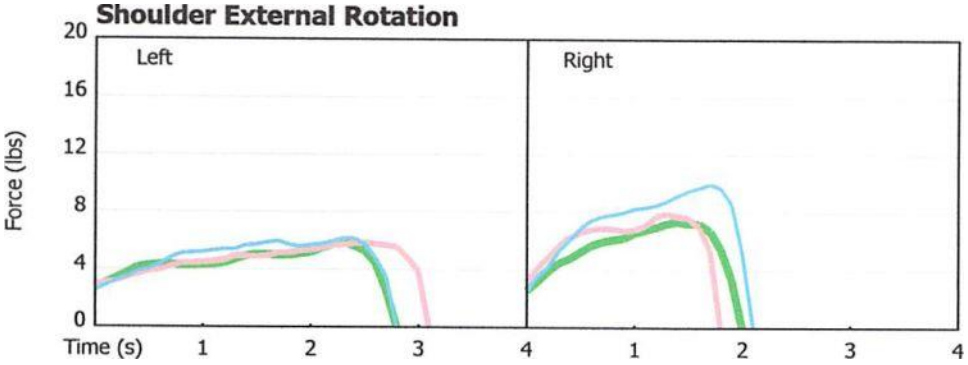
Rep 1	Rep 2
Rep 3	Rep 4

Shoulder Internal Rotation

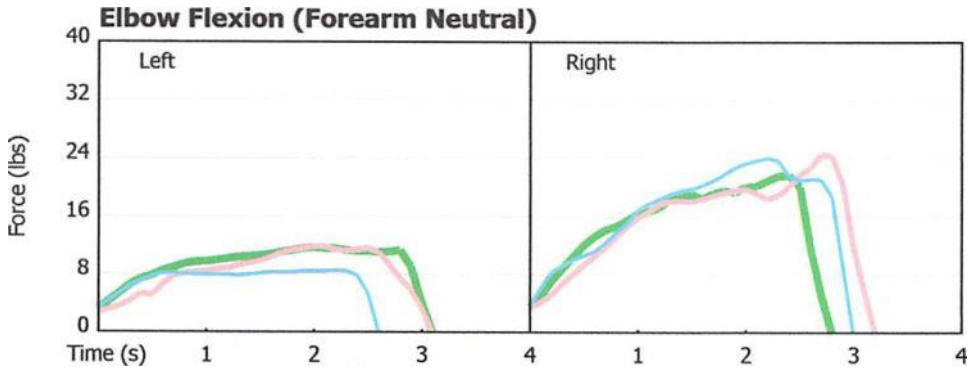


Rep 1	Rep 2
Rep 3	Rep 4

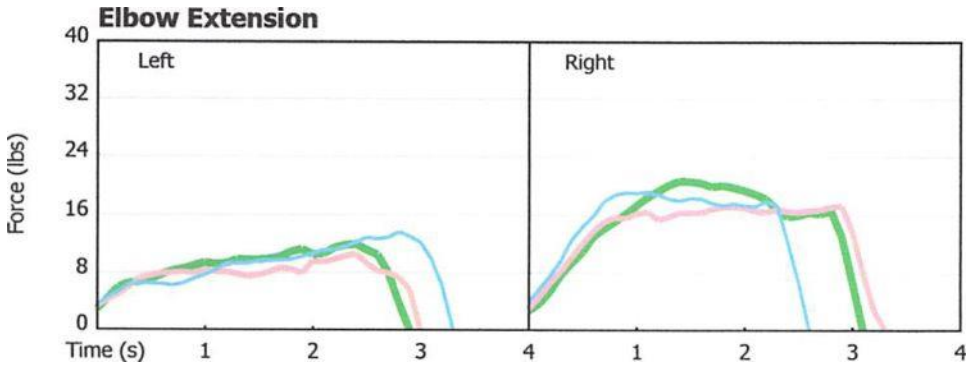
Shoulder External Rotation



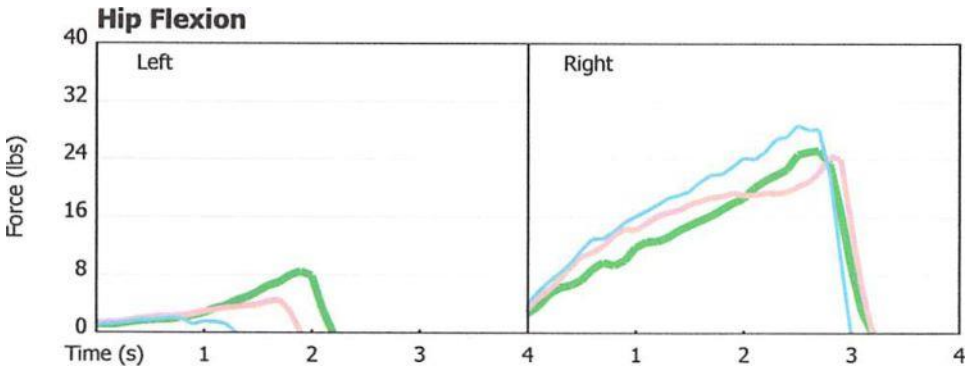
Rep 1	Rep 2
Rep 3	Rep 4



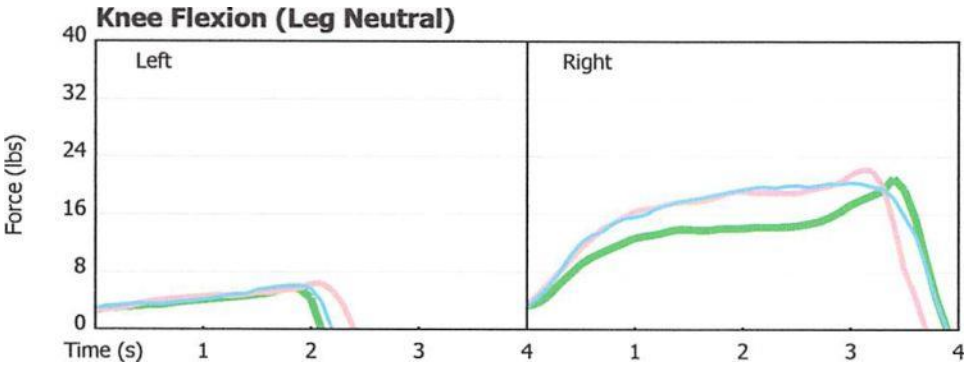
Rep 1	Rep 2
Rep 3	Rep 4



Rep 1	Rep 2
Rep 3	Rep 4

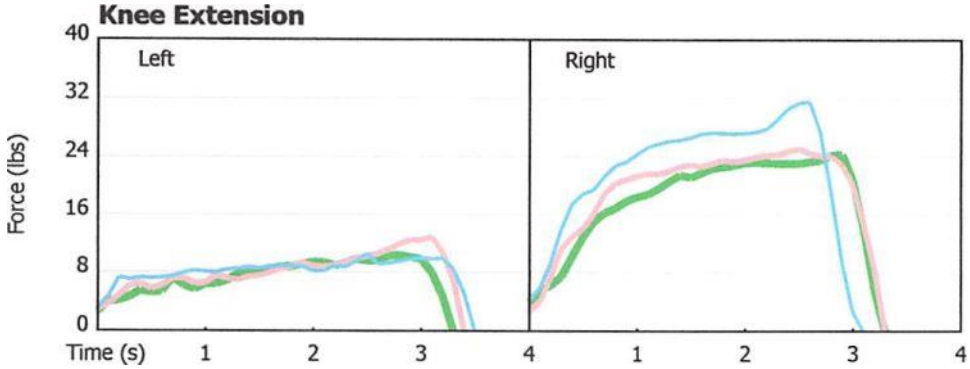


Rep 1	Rep 2
Rep 3	Rep 4



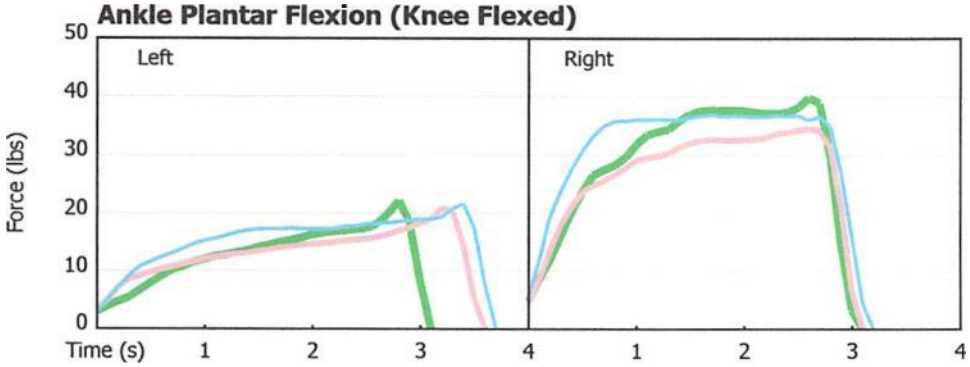
Rep 1	Rep 2
Rep 3	Rep 4

Knee Extension



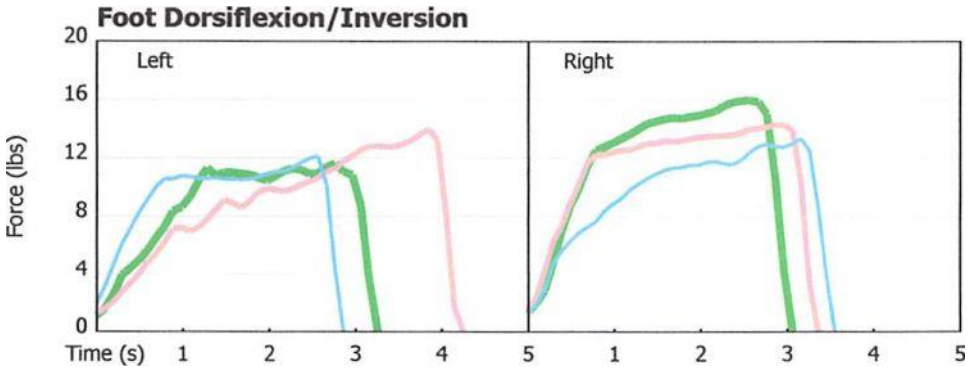
Rep 1	Rep 2
Rep 3	Rep 4

Ankle Plantar Flexion (Knee Flexed)



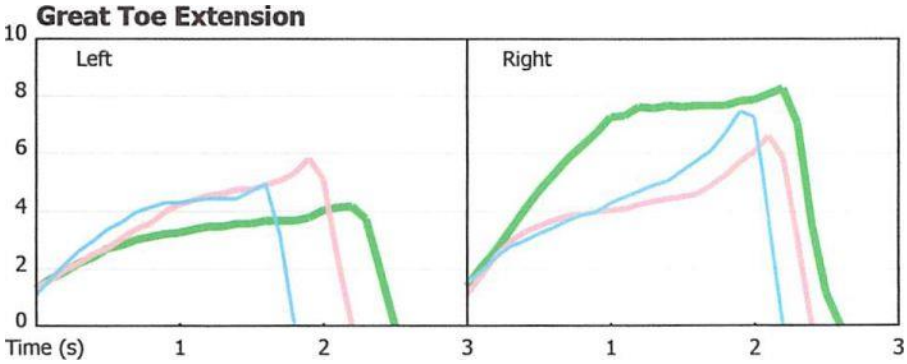
Rep 1	Rep 2
Rep 3	Rep 4

Foot Dorsiflexion/Inversion



Rep 1	Rep 2
Rep 3	Rep 4

Great Toe Extension



Rep 1	Rep 2
Rep 3	Rep 4

AMA Guide to the Evaluation of Permanent Impairment, 5th edition

An impairment rating was calculated utilizing the AMA Guide's ROM method. This was performed for comparison and validation of the rating calculated utilizing Utah's guidelines.

Figure 15-18 Cervical Range of Motion (ROM)

Name: Injured Patient Soc. Sec. No. 550-92-2448 Date: 10/10/2014

Movement	Description	Range
Cervical Flexion (See Table 15-12 pg419)	Calvarium angle	13°
	T1 ROM	
	Cervical flexion angle	
	+/-10% or 5°	Yes / No
	Maximum cervical flexion angle	13°
	% Impairment	4%
Cervical Extension (See Table 15-12 pg 419)	Calvarium angle	6°
	T1 ROM	
	Cervical extension angle	
	+/-10% or 5°	Yes / No
	Maximum cervical extension angle	6°
	% Impairment	5.75%
Cervical ankylosis in flexion/extension	Position	(Excludes any impairment for abnormal flexion of extension)
	% Impairment	
Cervical left lateral bend (See Table 15-13 pg 420)	Calvarium angle	22°
	T1 ROM	
	Cervical left lateral flexion angle	
	+/-10% or 5°	Yes / No
	Max c. left lateral flexion angle	22°
	% Impairment	1.45%
Cervical right lateral bend (See Table 15-13 pg 420)	Calvarium angle	15°
	T1 ROM	
	Cervical right lateral flexion angle	
	+/-10% or 5°	Yes / No
	Max c. right lateral flexion angle	15°
	% Impairment	2%
Cervical ankylosis in lateral bending	Position	(Excludes any impairment for abnormal flexion of extension)
	% Impairment	
Cervical left rotation (See Table 15-14 pg 421)	Cervical left rotation angle	5°
	+/-10% or 5°	Yes / No
	Max left cervical rotation angle	5°
	% Impairment	6%
Cervical right rotation (See Table 15-14 pg 421)	Cervical left rotation angle	5°
	+/-10% or 5°	Yes / No
	Max left cervical rotation angle	5°
	% Impairment	6%
Cervical ankylosis in rotation	Position	(Excludes any impairment for abnormal rotation)
	% Impairment	

Total cervical range of motion and ankylosis* impairment 25.2%

Total c. ROM - % impairments of flexion + extension + left lat. bend + right lat. bend + left rotation + right rotation

*If ankylosis is present, combine the ankylosis impairment with the range-of-motion impairment (Combined Values Chart pg 604). If ankyloses in several planes are present, combine the estimates (Combined Values Chart), then combine the result with the range-of-motion impairment.

A letter signed by James Neurosurgeon, MD (neurosurgeon) stating that

Friday, October 10,2014

To: Patrick Mickelsen, DC
2240 North Highway 89, Suite D
Harrisville, Utah 84404
Office: 801-782-2947
Fax: 801-782-2948

Re: Injured Patient

Confirmation of MMI

Dr. Mickelsen:

This letter is to confirm that. Injured Patient has achieved maximum medical improvement, which is to say that healing has ended and his condition is not expected to materially improve or deteriorate by more than 3% in the next year.

Regards,

X
James Pingree, MD