

Claimant Name: [REDACTED]

Claim Number: [REDACTED]

**INSURER'S EXAMINATION**  
Chiropractic Assessment

Claimant Name	Referral Source
[REDACTED] [REDACTED] Queen Mary Road [REDACTED]	[REDACTED] Company of Canada [REDACTED] [REDACTED] L3R5P8  Tel: [REDACTED] Fax: [REDACTED]  Attention: [REDACTED]
Claim Number / Policy Number	Date of Loss
[REDACTED]	February 2, 2015

Assessor's Name	Discipline / Speciality	Date/Time of Assessment	Date of Report
Dr. Jason Mazzearella	Chiropractor Accident Reconstructionist Chronic Pain Diplomate	October 9, 2015 11:00 AM to 12:22 PM	October 10, 2015

**CHIROPRACTIC, CRASH FORENSIC AND PAIN ASSESSMENT**  
**By: Dr. Jason Mazzarella**

Dear Mr. [REDACTED]

I have reviewed the records provided concerning Mrs. [REDACTED] motor vehicle accident which took place on February 2, 2015. For the purpose of disclosure, my qualifications are provided in Appendix A. This report summarizes my opinions and conclusions based on my review of documentation, physical examination, and crash forensics analysis regarding injury, injury potential and treatment need.

**Purpose of the Referral**

Ms. [REDACTED] was referred to [REDACTED] Independent Medical Examinations Inc. [REDACTED] Insurance Company of Canada for the completion of the following under Section 44 of the Statutory Accident Benefits Schedule: Chiropractic In-Person Examination.

**Issue(s) In Dispute**

1. Treatment and Assessment Plan (OCF 18)
  - a. By: [REDACTED] – Physiotherapist
  - b. Date: June 23, 2015
  - c. Diagnosis:
    1. WAD 2 – S.13.41
    2. Low Back Pain – M.54.5
    3. Other and unspecified injuries of lower leg – S.89
  - d. Requested Services
    1. Documentation for \$63.72
    2. Physical Rehabilitation for a total of \$1,581.76 (\$98.86/session – 16 total)

**Consent**

Prior to commencing the examination, the examinee was informed as to the nature, purpose, and parameters of the present examination. The examinee was advised that the examination would be conducted as an independent examination and as such did not constitute a client/patient therapist relationship with [REDACTED] IME or the examiner. The examinee was advised that a thorough report would be prepared and provided to the referring party. The examinee was also advised that [REDACTED]

IME and the examiner were in no way responsible for any measures taken, or not taken, by the referring party or other parties in regards to the resulting opinion of the present examination.

### Records Reviewed

All of the documents provided were reviewed prior to the preparation of this report and assessment of the insured claimant. The following is a list of documents with notations that I considered the most relevant.

1. Treatment and Assessment Plan – OCF 18
  - e. By: [REDACTED] – Physiotherapist
  - f. Date: June 23, 2015
  - g. Diagnosis:
    1. WAD 2 – S.13.41
    2. Low Back Pain – M.54.5
    3. Other and unspecified injuries of lower leg – S.89
  - h. Requested Services
    1. Documentation for \$63.72
    2. Physical Rehabilitation for a total of \$1581.76 (\$98.86/session – 16 total)
2. [REDACTED] General Hospital CNR
  - a. From: [REDACTED]
  - b. Date: July 21, 2015
  - c. See below
3. CNR - Urgent Care Visit Summary – [REDACTED] Imaging Services Department
  - a. By: [REDACTED]
  - b. Date: July 10, 2015
  - c. X-ray “Knees”
  - d. Significant Findings
    1. Mild tricompartmental OA of the knees
  - e. Concerns with Report: Doctor indicates 6 lumbar-shaped vertebral bodies, but in reading x-ray lists only 5 (L5 to S1 instead of L6 to S1).
4. OCF 5 – Permission to Disclose Health Information
  - a. For [REDACTED]
  - b. Date: May 26, 2015
5. Explanation of Benefits
  - a. By: [REDACTED]
  - b. Date: April 29, 2015



6. Treatment and Assessment Plan (OCF 18)

- a. By: [REDACTED] – Physiotherapist
- b. Date: April 23, 2015
- c. Diagnosis:
  - 1. WAD 2 – S.13.41
  - 2. Low Back Pain – M.54.5
  - 3. Other and unspecified injuries of lower leg – S.89
- d. Requested Services
  - 1. Documentation for \$63.72
  - 2. Physical Rehabilitation for a total of \$1,744.34.76 (\$98.86/session – 17 total)

7. Explanation of Benefits

- a. By: [REDACTED]
- b. Date: February 12, 2015

8. Application for Benefits (OCF 1)

- a. By: [REDACTED] MD
- b. Date: February 12, 2015

9. Treatment and Assessment Plan (OCF 18)

- a. By: [REDACTED] – Physiotherapist
- b. Date: February 10, 2015
- c. Diagnosis:
  - 1. WAD 2 – S.13.41
  - 2. Low Back Pain – M.54.5
  - 3. Other and unspecified injuries of lower leg – S.89
- d. Requested Services
  - 1. Minor Injury Guideline Treatment of \$1,800.00

10. CNR - Urgent Care Visit Summary – [REDACTED] Imaging Services Department

- a. By: [REDACTED]
- b. Date: February 6, 2015
- c. X-ray Lumbosacral Spine
- d. Significant Findings
  - 1. Degenerative disc disease L5-S1
  - 2. Schmorl's node L5-S1
  - 3. Anterior disc spurring L4-L5 and L5-S1
- e. Concerns with Report: Doctor indicates 6 lumbar-shaped vertebral bodies in the x-ray report, however if an additional vertebral body was present then L6 should have been noted. (L5 to S1 was noted rather than L6 to S1).

11. CNR - Urgent Care Visit Summary – [REDACTED]

- a. By: [REDACTED]
- b. Date: February 5, 2015
- c. Diagnosis:

1. Meniscus
- d. Significant Findings
  1. Tender lateral joint line
  2. Pain going from sitting to standing
12. OCF 5 – Permission to Disclose Health Information
  - a. By: Dr. [REDACTED] MD
  - b. Date: 2015, month and year unreadable
13. Additional Documents
  - a. [REDACTED] Letter of Direction
  - b. [REDACTED] Rights of Persons Served Summary – Dispensed to Insured

### Personal Details

The insured is married and currently retired. Though retired, she remains active and has several hobbies. She is a wedding officiant, currently writing a novel and has taken courses in “mindfulness.” She reported her height at 5 feet 3 inches, and her weight at 208 pounds. Her pulse pre-testing was 88 beats per minute on the right and post-testing 100 beats per minute on the right.

### Accident History

The insured reported that she was a front seat passenger of a Ford Focus that was stopped at a red light in traffic behind 2 or 3 other vehicles. The insured described the roads pre-collision as clear and dry. The insured reported that she was wearing her seatbelt, looking straight ahead and unaware of the impending crash until after impact. The insured reported that her vehicle was rear-ended by an unknown make and model sedan, causing her body to be thrown forwards and backwards. The insured reported that during the collision the airbags did not deploy, that her body nor her head struck the interior of the vehicle with the exception of her torso and pelvis being restrained by the lap and shoulder belt, and she did not sustain loss of consciousness. The insured reported that that collision did not result in her seat back to break.

The insured reported that an ambulance did not attend the scene post-collision, however she did visit a hospital emergency room. The insured reported post-collision light-headedness and denied any symptoms of shock.

### Automobile Crash Forensics Analysis

Crash Forensics is a medical service that allows for an occupant injury potential determination to be made through the use of physics, science, occupant kinematic analysis and other variables including



collision vector, risk factors, and principle direction of force. In a motor vehicle crash, the occupant's injuries are determined by their body's response to the associated collision force, risk factors, and crash variables all of which will determine the type of force (flexion, extension, shear, torque, compression, distraction or tension) and location of this force on the occupant.

Once this injury potential is produced, a comparison of tissue injury can be completed to see if the known injury potential of the motor vehicle collision correlates to the reported injury sequela of the occupant. This determination can then be used to make a scientific, researched based, impartial, accurate and defensible determination of injury sustained and benefit need.

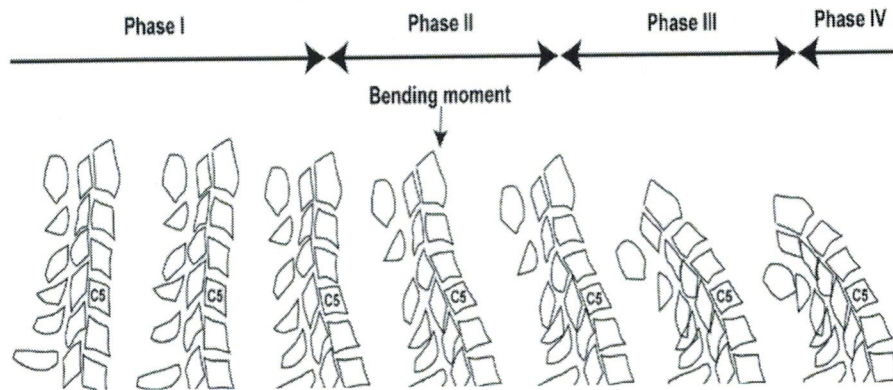
A crash forensic reconstruction of the occupant kinematics sequence of events was completed and based on the work of Ono, Siegmund, Croft and Nordhoff.

### **Occupant Kinematic Analysis – Rear Impact Collision**

This forensics analysis is applicable to speed changes as low as 2.5 mph. Upon impact, the vehicle that the occupant is a passenger in will continue to move forward, while the occupant remains relatively stationary as per Newton's first law of motion. The first contact will occur between the seatback of the vehicle and the occupant. Again, in accordance with Newton's 1st law of motion, the occupant's mass will resist this motion, however as the seatback continues to move forward, the occupant's body will give way to this forward motion and begin to move.

As the seat back continues to move forward, the occupant's pelvis and lower back will start to be accelerated forward. Following this, the thoracic curve will flatten due to compression of the forward moving seatback against the occupant's thoracic kyphosis. The flattening of the occupant's thoracic kyphosis will result in a vertical compression force that will be transmitted throughout the spine. At this point, the lumbar spine will also flatten to some degree. As there is no vertical force, the torso will start to rise along with the force by "ramping" up the seatback. This will also result in a rise of the pelvis and lower extremity, however will be limited with contact of the lap restraint belt (if worn). While this is occurring in the torso of the occupant, the head is still essentially motionless as per Newton's first law of motion. As the torso is still moving forward as compared to the head, horizontal shear force will occur in the neck roughly parallel to the facet joint line. As this force is initiated under continued compression force, the overall stiffness of the neck can be diminished as a result of ligamentous slack allowing for injury.

As the vertical force continues upwards into the neck it initiates flexion of the upper cervical segments and hyperextension of the lower segments. This is the development of a reverse S curve. This formation continues as the torso continues to move forward. This primary shear force effect will translate through the C5-C6 motion segment.



- Foreman SM, Croft AC: Whiplash Injuries. The Cervical Acceleration / Deceleration Syndrome. Third Edition. Philadelphia PA. 2002

After formation of this reverse S curve, this compression force that was occurring in the spine changes to a tension force as the upward moving head is now moving in opposite direction to the now downward moving torso.

At the same time, the head begins to move into extension along with the neck as the head takes up the backseat distance during the head lag phase. Depending on head restraint geometry, this contact will usually occur in about 100 millisecond at which time head translational acceleration will peak. Any stored energy in the seat back from its deflection (usually about 5-15 degrees) will be released as the occupant begins to move forward into the re-entry or rebound phase of the occupant's kinematic response. This initiates the forward bending moment and effectively increases the torso and head speed (over speed), as well as the direction of horizontal shear force acting on the spine.

Depending on the initial position of the occupant as compared to the safety harnesses, the lap and shoulder belts (if worn) will eventually restrain the forward moving torso which will effectively exaggerate the neck's bending moment. Again, the head will have a forward inertia at this point and the safety restraint system will resist this forward inertia resulting in hyperflexion that can lead to disc injury and posterior cervical spine soft tissue injury.

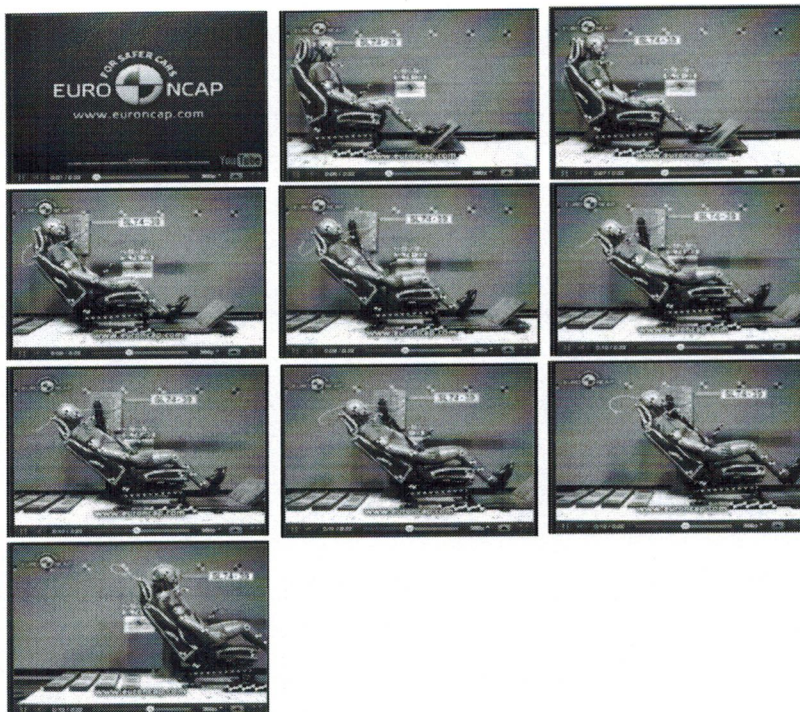
- Foreman SM, Croft AC: Whiplash Injuries. The Cervical Acceleration / Deceleration Syndrome. Third Edition. Philadelphia PA. 2002.
- Ono K, Kaneoka K, Wittek A, Kajzer J: Cervical injury mechanism based on the analysis of human cervical vertebral motion and head-neck-torso kinematics during low speed rear impacts. 41st Stapp Car Crash Conference Proceedings. SAE paper 973340, 339-356, 1997
- Siegmund GP, King DJ, Lawrence JM, Wheeler JB, Brault JR, Smith TA: Head/neck kinematic response of human subjects in low-speed rear-end collisions. SAE Technical Paper 973341, 357-385, 1997
- Nordhoff LS: Motor Vehicle Collision Injuries. Biomechanics, Diagnosis, and Management. Second Edition. Mississauga Ontario Canada 2005.



The currently under review Treatment and Assessment Plan (OCF 18) submitted by [REDACTED] PT on June 23, 2015 lists injuries in the insured's neck, back and lower leg. Further review of notes indicate that the insured has been treated for a WAD 2 injury, lumbar spine injury and meniscal injury to her right knee. During evaluation, the insured continued to report symptoms in her neck, low back and right knee areas.

In review of the medical documentation, along with analysis of the occupant kinematics that would have occurred, the diagnosis of WAD 2 and lumbar spine injury is plausible. However, the diagnosis of a lower leg injury, which was reported to be a right knee meniscal injury is not. For a meniscus injury to occur, there must be a component of compression and torsion in the knee joint. As indicated above, the kinematics would have resulted in a lifting of the pelvis off of the seat (see below). This injury mechanism was described by the insured in her account of the accident, reporting that she felt herself "lift up" and is confirmed in the pictures below. Please note that the last picture depicts the legs not touching the ground.

Research conducted by the European New Car Assessment Program provides a visual representation of the occupant kinematic motion that occurs in a rear impact collision with the usage of a crash test dummy.



### Past Medical History

The insured reported a past medical history that included the following:

1. GERD



2. Duodenal Ulcer
3. Interstitial Cystitis
4. Rhinitis
5. PTSD
6. Anxiety
7. Tonsillectomy
8. Laparoscopy
9. Basil Cell Cancer Removal
10. Pre-Knee Pain
11. Fibromyalgia
12. Backer's Cyst

In review of the past medical history several concerns had initially arose. The insured reported that she was diagnosed with Interstitial Cystitis pre-collision and that severity of her condition was so severe that at one point her doctor considered removing her bladder. During examination, the insured stated that her condition is currently under control.

The insured reported Post Traumatic Stress Disorder (PTSD) and anxiety. When the insured was directly questioned, she reported that both her PTSD and anxiety conditions were caused by a work place issue/trauma, which resulted mostly in nightmares. Furthermore, the insured stated that these conditions were not affected nor did not worsen following her motor vehicle accident.

The insured was diagnosed with Basil Cell Cancer and reported that she has had "6 total bouts of this," each time requiring tissue removal. The insured was diagnosed by a Rheumatologist with Fibromyalgia in 1999, further reporting that the Rheumatologist stated there was nothing that they could do to help her. The insured was later referred to a Physiatrist, who prescribed gentle stretching and light cardiovascular exercises, which overall were reported to alleviate her symptoms.

The insured was diagnosed with a right torn meniscus prior to her motor vehicle accident, as well as bilateral Backer's cysts prior to her motor vehicle accident. Bilateral menisci testing were found to be negative upon examination. Baker's cyst or popliteal cysts are usually associated with arthritis, which does correlate with previous medical imaging. Bilateral popliteal cysts were not found upon palpation during bilateral knee examination.

#### Doctor Evaluation and Testing

#### Cervical Spine, Head and Shoulders:

The insured reported that she initially felt sinus pain and described the pain as though her sinuses were draining post-collision. The insured also reported that she developed neck pain and headaches surrounding her orbital regions, as well as occasional light-headedness. The insured reported neck pain during examination which was described as a "stiffness with tension" and rated as 1-2/10, with 10 being the worst possible pain. Furthermore, the insured described her neck pain as infrequent in nature and that the onset of her neck pain only occurred following typing for prolonged periods of time in a seated

posture as she is currently in the process of authoring a book. The insured reported that she experiences headaches which are infrequent in nature and only present when her neck is stiff and tense. The insured did not report shoulder pain. However, due to the close anatomical proximity of shoulder girdle musculature to the neck, these regions were evaluated and assessed during the examination.

Physical testing of the cervical spine resulted in negative facet joint testing, nerve root tension testing and muscle tension testing bilaterally. Muscles, reflexes and sensory evaluation associated with the cervical nerve roots were within normal limits bilaterally, with exception to C7 on left which was not tested due to barrier limited by cast. Soft tissue evaluation revealed tender points in the insured's trapezius muscles bilaterally (left more than right was noted), left levator scapulae muscle, bilateral scalene muscle group and left cervical para-spinal muscle group. Trigger points were noted in the insured's bilateral sternocleidomastoid (SCM) muscles.

### **Lumbar Spine and Pelvis:**

The insured reported that she did not initially experience back pain post-collision, however did develop low back pain later on. The insured reported lower back pain during examination and was described as "stiffness with tension" with greater pain felt on the right side. The insured's low back pain was rated as 1-2/10, with 10 being the worst possible pain. The insured reported that her low back pain was infrequent in nature and that she only noticed discomfort after prolonged standing and sitting. The insured did not report pelvis pain, however due to the close anatomical proximity of pelvis musculature to the lower back, these regions were evaluated and assessed during evaluation.

Physical testing of the lumbar spine resulted in negative facet joint testing, nerve root tension testing, hip testing and muscle tension testing bilaterally. Sacroiliac joint testing was performed bilaterally and found to be positive with Yeomen's testing on the right side and during Double Leg Raise testing. Muscles, reflexes and sensory evaluation associated with the lumbar nerve roots were within normal limits bilaterally. Soft tissue evaluation revealed tender points in the insured's right gluteus medius and minimus muscles only.

### **Knee**

The insured reported that she did not experience knee pain post-collision. A few days following the motor vehicle accident, the insured reported experiencing extreme right knee pain when trying to change positions from a seated to standing posture at a restaurant. The insured immediately visited [REDACTED] Health Centre and was seen by Dr. R. [REDACTED]. Dr. [REDACTED] reported tender lateral joint line pain and diagnosed the insured with a right meniscus re-aggravation.

During examination, the insured reported right knee pain which was described as "stiffness with pressure and locking" and rated right knee pain as 3.5/10, with 10 being the worst possible pain. The insured also reported that her right knee never locked, however has "given out four times" following the motor vehicle accident. The insured reported that her right knee pain was aggravated during bending, prolonged standing and has been an issue due to "giving out." She reported that her knee "gave out" for three consecutive months post-collision (April, May and June) and then did not "give out" until this month when she was attending a wedding convention. The insured stated that she stood all day and when closing the convention with a speech that her right knee "gave out" when ascending stairs to the



Claimant Name:

Claim Number:

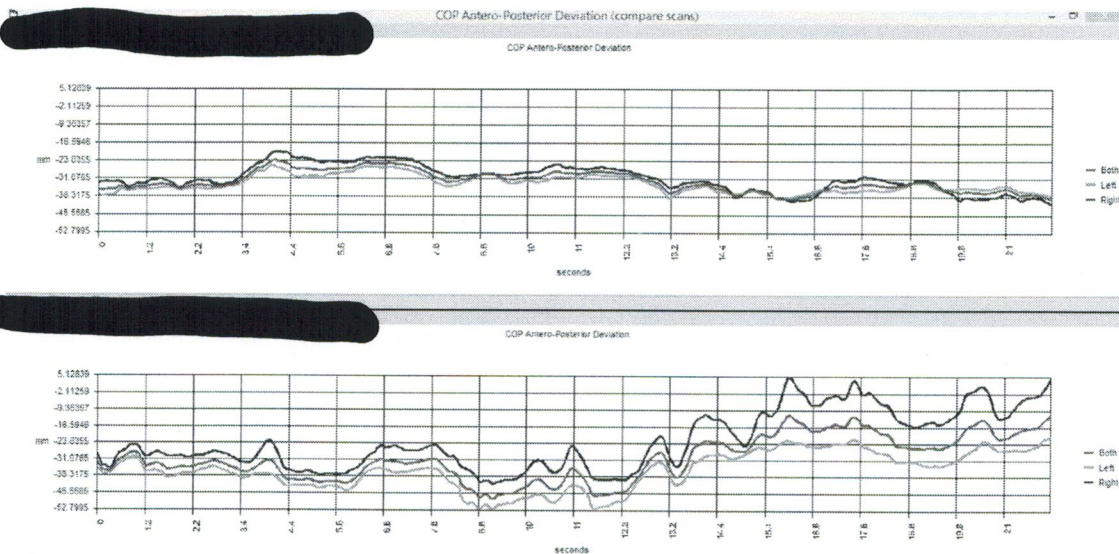
stage, which resulted in her sustaining a left scaphoid fracture. The insured presented with a left wrist cast during examination (see picture below).

Physical testing of the knee resulted in negative ligament, menisci and patellar dislocation testing bilaterally. Soft tissue evaluation revealed tender points in the insured's right medial hamstring muscle and iliotibial (IT) band only.

### Cranial Nerve and Dorsal Column Testing

Due to the kinematics of the collision, cranial nerve and dorsal column testing would be considered a standard of care. Cranial nerve (CN) testing was unremarkable with the exception of CN 8. Vestibular testing results are shown below, with Romberg's position completed first and Romberg's test completed second.

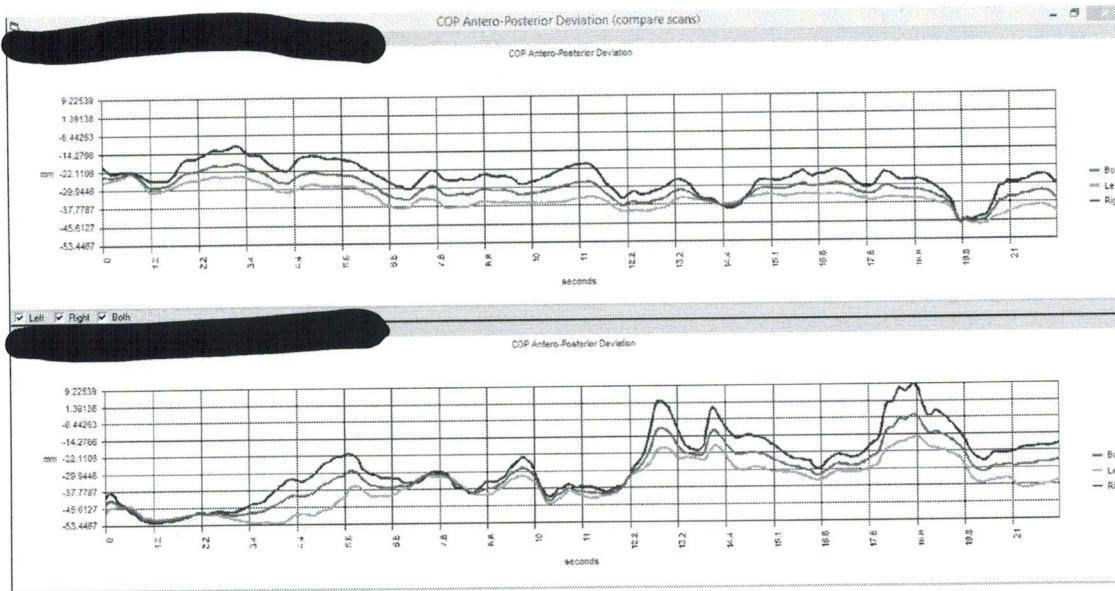
Scan's at 11:15 am



Scans at 12:15 pm

Claimant Name:

Claim Number:



### Injury Determination and Pain Analysis

In review of the history, medical documentation, crash forensics analysis and physical examination, it is my opinion that the insured has sustained simple soft tissue injuries to the neck, back and hip consistent with the definition of minor injury. It is my opinion that the insured's neck pain is primarily due to trigger points in her SCM muscles, which is causing both pain referral pattern's (headaches) and changes in autonomic function. It is my opinion that her back pain is primarily due to a right sacroiliac sprain/strain with gluteus medius and minimus involvement and her continued knee pain is due to a hypertonic IT band.

When I presented these findings to the insured, along with the rational noted above and visual descriptions seen below. The insured agreed with all of my findings.

**SCM:**