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December 2, 2019

Ms. Jannelle Mackoff
Kaz Law Injury Lawyers
570 Granville Street –Suite 1900
Vancouver, B.C. V6C 3P1

Dear Ms. Mackoff:

Re: Daniela Grabovac
DOB: May 29, 1995
MVA: August 12, 2015 & February 23, 2018
Your File No: 25426-1

At your request I evaluated Ms. Daniela Grabovac in my office in Vancouver on December 2, 2019. The facts and assumptions on which my opinions in this report are based are itemized below and have been extracted from the documents sent to me for review (Appendix 2) as well as my history and physical examination findings (Appendix 1). I am the sole person responsible for this evaluation and the content of this report.

This report has been prepared with the clear understanding that it is my duty to assist the court and that I am not advocating for any party. This report has been prepared in conformity with my duty to the court. If called upon to give oral or written testimony, I will do so in conformity with my duty.

The purpose of this report is to delineate the nature of the injuries Ms. Grabovac incurred in the subject motor vehicle accidents, to explore possible confounding factors, as well as to address possible further investigations, treatment, prognosis, care and equipment needs, and possible residual activity limitations pertaining to the injuries Ms. Grabovac sustained in the motor vehicle accidents in question within the realm of my expertise as a specialist in Physical Medicine & Rehabilitation.

The nature of the opinions sought is outlined in your introductory letter of November 8, 2019. A copy of the opinions requested is in the Appendix 3 section of this report.

QUALIFICATIONS

I am a fully qualified medical practitioner licensed by the College of Physicians and Surgeons in the Province of British Columbia. I obtained a Bachelor of Science degree in Chemistry in 1977 at the University of Munich, Germany, and a Doctor of Medicine degree in 1983 at the University of Hamburg, Germany. After a rotating internship at the Royal Alexander Hospital in Edmonton from 1984 – 85, I trained in Physical Medicine and Rehabilitation initially in Edmonton, Alberta, and completed this specialty program at the University of British Columbia, Vancouver. In 1989 I obtained my Fellowship from the Royal College of Physicians and Surgeons in the Specialty of Physical Medicine and Rehabilitation. From August to December, 1989 I did a research Fellowship at the Workers' Compensation Board in Richmond, British Columbia.

I was the Rehabilitation Consultant of the Acute Spinal Cord Injury Unit at Shaughnessy and Vancouver General Hospitals between 1990 and 1998. I was the Senior Consultant for the Acquired Brain Injury Program at G. F. Strong Rehabilitation Centre, Vancouver from 1996 to August 2001. I was the Rehabilitation Consultant for the George Pearson Centre from 1990 until June 2015.

I was on staff at Vancouver Hospital and Health Sciences Centre and had an active outpatient practice, with a special interest in the management of musculoskeletal and neurological problems until June 30, 2018. I am associated with the University of British Columbia, Division of Physical Medicine and Rehabilitation.

FACTS & ASSUMPTIONS RELIED UPON

Pre-August 2015 Motor Vehicle Accident:

1. Ms. Grabovac reported that as a result of two remote motor vehicle accidents in 1999 and 2000 she sustained injuries to her back. She reported that her back symptoms completely resolved.

2. Ms. Grabovac reportedly had not previously injured her neck, shoulder girdle region, shoulders, arms, or left leg. She reportedly had not been troubled by headaches, neck pain, shoulder girdle pain, shoulder pain, arm pain, or hip girdle pain.

3. Ms. Grabovac reportedly injured her right anterior cruciate ligament in 2009. She reportedly made a full symptomatic and functional recovery.

4. Ms. Grabovac stated that as a result of the 1999 and 2000 motor vehicle accidents, she developed nightmares and flashbacks. Her driving-related anxiety was rekindled as a result of another motor vehicle accident in 2010, which did not lead to any

physical trauma. Ms. Grabovac reportedly did not harbour mood dysfunction at the time of the 2015 motor vehicle accident. At that time, she reportedly would have rated her mood at 8/10, on a scale from 0 to 10, with 10 representing the happiest imaginable emotional state.

5. Ms. Grabovac reportedly would have rated her anxiety state at 5/10 prior to the August 2015 motor vehicle accident, on a scale from 0 to 10, with 10 representing maximum imaginable anxiety. Ms. Grabovac stated that prior to the first subject motor vehicle accident she was not under the care of a psychiatrist, psychologist, or counsellor. She reportedly had not been prescribed psychoactive medication for mood dysfunction, anxiety, or sleep disturbance.

6. Ms. Grabovac reportedly felt physically well prior to the August 2015 motor vehicle accident. She reportedly did not experience musculoskeletal or neurologic symptoms or headaches. Ms. Grabovac reportedly was not under the care of a specialist physician or therapist. She reportedly did not take a painkiller, anti-inflammatory medication, or muscle relaxant.

7. Ms. Grabovac reported that at the time of the August 2015 motor vehicle accident, she lived in her parents' house in Coquitlam. She participated in domestic tasks, power-washing, and removing snow manually. Ms. Grabovac reportedly was a member of a gym. She exercised at Fitness 2000 in Burnaby three times per week. She reportedly pursued snowboarding ten times per season in Whistler as well as on local mountains.

8. Ms. Grabovac was a full-time student at Vancouver College of Dental Hygiene at the time of the August 2015 motor vehicle accident. At that time, she did not work in any capacity.

Subject Motor Vehicle Accidents & Post-Subject Motor Vehicle Accidents:

1. Ms. Grabovac reportedly has full recollection of the events surrounding the two subject motor vehicle accidents. Ms. Grabovac reportedly struck the right side of her face in the second subject motor vehicle accident. She reportedly developed a bruise in the region of her right cheekbone as well as a bruise in the right upper anterior chest region from contact with the shoulder strap.

2. Ms. Grabovac stated that as a result of the first subject motor vehicle accident she developed headaches, neck pain, and low back pain. She reportedly experienced mood dysfunction and anxiety. Her family physician, Dr. Parhar, prescribed citalopram with favourable response. Regarding her multisite pains, Ms. Grabovac was not given any prescription drugs.

3. Ms. Grabovac reported that her driving-related anxiety as well as headaches, neck pain, and low back pain were temporarily aggravated as a result of another minor motor vehicle accident, which took place in September 2015. Ms. Grabovac reportedly did not experience any long-lasting adverse physical or mental health issues in reference to the September 2015 motor vehicle accident.

4. Ms. Grabovac reportedly continued furthering her education after the 2015 subject motor vehicle accident. She reportedly obtained her degree as a dental hygienist in January 2017. Ms. Grabovac reportedly was employed by two dental offices prior to the February 2018 motor vehicle accident. She reportedly worked 40 to 50 hours per week.

5. Ms. Grabovac had a CT scan of her head requested by Dr. Parhar on April 7, 2017. Under the headline "history" there was reference to "atypical headache, nausea, mild left visual change". This imaging study did not reveal any intracranial abnormality.

6. Ms. Grabovac reported that prior to the February 2018 motor vehicle accident, she felt physically, emotionally, and psychologically well. At that time, she did not harbour anxiety or mood dysfunction. Her neck, back, shoulders, arms, hips, and legs felt fine. She was not troubled by headaches. Ms. Grabovac reportedly was not under the care of a specialist physician, mental health care professional, or allied healthcare provider. Ms. Grabovac reported that her anxiety was controlled on citalopram.

7. Ms. Grabovac reported that since the February 2018 motor vehicle accident, she has experienced persistent headaches, neck pain, upper back pain, mid back pain, low back pain, right shoulder girdle pain, right shoulder pain, intermittent pain extending into her right upper extremity associated with numbing and tingling sensations and weakness, left hip girdle pain with recurrent pains and numbing and tingling sensations extending into left leg as far as to the sole of the foot accompanied by left leg weakness, sleep disturbance, cognitive challenges, mood dysfunction, and anxiety. With respect to her physical state, Ms. Grabovac reportedly has made a 28% recovery to date. She reportedly has not noted any appreciable improvement with respect to her emotional and psychological distress.

   Ms. Grabovac reported that in addition to her right upper extremity sensorimotor symptoms, she has been aware of recurrent tremor affecting her right hand and fingers.

8. Ms. Grabovac reported that after the February 2018 motor vehicle accident she has not incurred any superimposed musculoskeletal or neurologic injuries.

9. Ms. Grabovac reported that on account of her multisite pains she has been dealing with profound activity limitations. To the present, her sitting, standing, walking, lifting, carrying, and reaching capacity with her right upper extremity have remained compromised. Ms. Grabovac reported that after the 2018 motor vehicle accident, she was not able to resume her customary gym-based exercise routine, snowboarding, or playing on a soccer team and volleyball team. Ms. Grabovac reportedly has not been able to return to work as a dental hygienist since the February 2018 motor vehicle accident.

10. Ms. Grabovac was assessed by Dr. Kay, general practitioner, on August 12, 2015, in reference to the first subject motor vehicle accident. Recorded complaints included headache, neck pain, and back pain.

11. Ms. Grabovac was reviewed on several occasions by Dr. Parhar, her attending family physician, after the first subject motor vehicle accident. Documented symptoms included headaches, neck pain, mid back pain, low back pain, jaw pain, fatigue, mood dysfunction, anxiety, sleep disturbance, and impairment of concentration.

12. Ms. Grabovac attended chiropractic treatment and physiotherapy after the first subject motor vehicle accident. Rendered treatment included spinal adjustments, electrotherapy, cervical spine decompression, manual neck stretches, and instruction in exercises. With respect to her anxiety and mood issues, Ms. Grabovac attended counselling sessions with Ofir Vaisman.

13. Ms. Grabovac was assessed by the Emergency Health Services in reference to the second subject motor vehicle accident. Twice the Glasgow Coma Score was recorded at 15. In the Ambulance Crew Report, there was reference to headache, neck pain, back pain, and anxiety.

14. Ms. Grabovac was seen in the Emergency at Surrey Memorial Hospital on the day of the second subject motor vehicle accident. Recorded complaints included nausea, dizziness, mild tinnitus, anxiety, neck tenderness radiating down the spine, and abdominal pain. There was reference to the absence of loss of consciousness. The Glasgow Coma Score was recorded at 15.

    Ms. Grabovac had CT scans of her head and cervical spine on February 23, 2018. No intracranial abnormality was identified. The cervical spine was normally aligned. Disc and vertebral heights were well-maintained. No paraspinal soft tissue abnormalities were noted.

    X-rays of the chest and thoracic spine obtained on February 24, 2018, reportedly did not disclose any abnormality.

15. Ms. Grabovac was assessed by Dr. Kelly on February 28, 2018. Dr. Kelly noted that Ms. Grabovac had struck the right side of her head against the window and that her left knee had hit the dashboard. The Jeep Cherokee was towed and repaired.There was reference to the absence of loss of consciousness. Dr. Kelly made the diagnoses of neck, back, and shoulder sprains, facial contusion, and depression.

16. Ms. Grabovac commenced treatment at Physio Works on March 8, 2018. Recorded complaints included headaches, neck pain, low back pain, and intermittent pins and needles sensations. Subsequent noted symptoms pertained to the right shoulder girdle region, neck, right upper extremity, ribcage, right shoulder, and headaches.

17. In reference to the second subject motor vehicle accident, Ms. Grabovac has been under the care of Dr. Parhar since late March 2018. Documented complaints included headaches, neck pain, right shoulder girdle pain, right shoulder pain, right upper extremity pain, low back pain extending into the left leg, sensorimotor symptoms affecting the right upper and left lower extremities, jaw pain, dizziness, blurred vison, lightheadedness, anxiety, cognitive impairment, depression, tinnitus, and sleep disturbance.

18. Ms. Grabovac had an MRI scan of her neck on April 19, 2018, which reportedly disclosed minimal posterior disc bulging at C4-5 and mild posterior disc bulging at C5-6. There was no imaging evidence of neural impingement.

19. An MR arthrogram of the right shoulder of May 9, 2018, carried out in conjunction with intra-articular administration of an anaesthetic reportedly showed mild tendinopathy of the supraspinatus tendon, but no rotator cuff tear or labral tear. Ms. Grabovac reported that her right shoulder pain was temporarily aggravated after the aforementioned MR arthrogram of the right shoulder.

20. An MR arthrogram of the left hip of May 25, 2018, included concomitant administration of an anaesthetic into the hip joint. No intra-articular abnormality was noted. In particular, there was no evidence of a labral tear. The reporting radiologist noted radiographic evidence of mild gluteus medius tendinopathy. Ms. Grabovac reported that following the MR arthrogram of her left hip, she noted temporary accentuation of her left hip girdle pain.

21. Ms. Grabovac underwent a hearing test on March 13, 2019, which showed no hearing impairment in either ear.

22. From the summer of 2018 until March 2019, Ms. Grabovac was under the care of Dr. Cook at Motus Health and Wellness. Recorded complaints included neck pain,

right shoulder pain, left hip pain extending into the left leg and sleep disturbance. Ms. Grabovac was prescribed topical gabapentin and amitriptyline.

23. Regarding her multisite pains, Ms. Grabovac attended chiropractic and massage therapy. She has also been receiving input from Dr. Jones, registered psychologist, pertaining to PTSD-like symptoms, general anxiety, mood dysfunction, and chronic pain.

24. Ms. Grabovac was assessed by Dr. Mian, physiatrist, on February 1, 2019. Dr. Mian entertained the diagnoses of mechanical neck pain and right shoulder rotator cuff syndrome. Dr. Mian injected the right subacromial space under ultrasound guidance with corticosteroid. Ms. Grabovac reportedly did not derive any symptomatic gains in reference to this particular therapeutic intervention, not even for the duration of the anaesthetic.

25. In the spring of 2019, Ms. Grabovac was enrolled in a supervised exercise program at Karp Rehabilitation. Recorded symptoms pertained to neck pain, low back pain, hip pain, right shoulder pain, and sleep disturbance. The attending therapist recorded reduced neck, back, and right shoulder mobility.

26. In the spring of 2019, Ms. Grabovac was enrolled in an inpatient rehabilitation program in Serbia. MRI scan of the hips essentially did not disclose any abnormality. An MRI scan of the lumbar spine reportedly revealed a disc abnormality at L4-5. An MRI scan of the head showed no intracranial abnormality. Nerve conduction studies of the right upper extremity and left leg were reportedly normal. EMG studies were reportedly suggestive of chronic radiculopathy of the right C6, C7, and C8 nerve roots and L4 and L5 nerve roots on either side.

27. Ms. Grabovac was assessed by Dr. Jagdeo, psychiatrist, on July 8, 2019. Enertained psychiatric diagnoses included major depressive disorder – recurrent episode, panic disorder, obsessive compulsive disorder and query post-traumatic stress disorder.

28. Ms. Grabovac was assessed by Ms. Rhiannon Evans, occupational therapist of JR Rehabilitation Services Inc., on September 10, 2019. Reported subjective complaints included axial skeletal pain extending from the neck all the way down to the tailbone and into the left hip, severe pain, weakness and tremor affecting the right arm, minor hearing damage in the left ear, intermittent left-sided tinnitus, recurrent severe headaches, sleep disturbance, impairment of memory, impairment of concentration, slurred speech secondary to Lyrica, increased anxiety, post-traumatic stress, fear of driving, and mood disturbance.

29. Ms. Grabovac was assessed by Dr. Arseneau on November 22, 2018. At that time, Ms. Grabovac's chief complaints pertained to right shoulder, back, left leg, and right arm pains, constant headache, fatigue, cognitive impairment, sleep disturbance, diminished hearing, dizziness, nausea, anxiety, post-traumatic stress disorder symptoms, and depression. In reference to the two subject motor vehicle accidents, Dr. Arseneau made the diagnoses of myofascial pain syndrome, fibromyalgia, chronic fatigue syndrome, tension-type headaches, aggravation of pre-existing temporomandibular joint dysfunction and aggravation of pre-existing depression, anxiety, and post-traumatic stress disorder.

30. Today Ms. Grabovac walked into my office with a symmetrical, normal gait pattern. Higher level balance skills were intact.

    There were no frontal lobe release signs. Cortical sensation was intact. Cerebellar coordination was normal. Ms. Grabovac was a good historian. Speech and primary language functions were normal.

    There was no clinical evidence of spinal cord or nerve root impairment or nerve root irritation. There was no evidence of peripheral nerve entrapment neuropathy in the upper extremities. In particular, there was no evidence of right ulnar neuropathy.

    There was no clinical evidence of thoracic outlet syndrome accounting for the reported right upper extremity sensorimotor symptoms.

    Only one of the eighteen characteristic sites associated with a diagnosis of fibromyalgia were reportedly tender during distraction on direct questioning.

    Volunteered active neck range of motion was diminished. In the supine position, passive neck side flexion was normal without any observed pain mannerisms. In the prone position, observed active neck rotation to either side was full without any observed verbal or facial expression of discomfort.

    Alignment of the thoracic and lumbar spine was normal in all planes. No leg length discrepancy was noted. There was no evidence of pelvic malalignment or sacroiliac joint dysfunction.

    Truncal mobility was mildly diminished.

    The findings on examination included reported discomfort/pain with some movements of the back and multisite diffuse tenderness even to light pressure as outlined below.

Examination of the right shoulder revealed diminished active and active assisted mobility, but not in a capsular pattern. There was no evidence of frozen shoulder, bicipital tendinopathy, rotator cuff impingement, instability or a SLAP lesion.

Hip range of motion was symmetrical and normal. Piriformis tests were negative. The left posterior and lateral hip girdle regions were diffusely tender.

There were no clinical features indicative of complex regional pain syndrome affecting the right upper extremity or left lower extremity.

OPINION

Ms. Grabovac is a 24-year-old right-handed woman I evaluated on December 2, 2019, for the purpose of an independent medical assessment.

It is my understanding that Ms. Grabovac felt physically well prior to the August 2015 motor vehicle accident. At that time, she was functioning at a high level. Ms. Grabovac was capable of performing all domestic tasks. She assisted with power-washing and manual snow removal. She enjoyed snowboarding and exercising in a gym. She worked a minimum of 40 hours per week as a dental hygienist.

Based on today's obtained history and review of the forwarded clinical records, Ms. Grabovac sustained injuries to her neck and back in the August 2015 motor vehicle accident, which were probably limited to soft tissue structures such as muscles, tendons, and ligaments. There is no evidence that Ms. Grabovac incurred more significant structural damage to her neck or back in this motor vehicle accident such as a fracture, disc protrusion/herniation, or ligamentous injuries resulting in spinal instability. Furthermore, there is no evidence that Ms. Grabovac suffered a traumatic brain injury, an injury to her spinal cord, or an injury to any of her cervical, thoracic, or lumbosacral nerve roots in the August 2015 motor vehicle accident.

Based on today's obtained history, Ms. Grabovac was involved in a minor motor vehicle accident in September 2015. As a result of this motor vehicle accident, Ms. Grabovac reportedly experienced transient aggravation of her axial skeletal pains, which settled down to the baseline level within several months.

Today Ms. Grabovac reported that as a result of the August 2015 motor vehicle accident she was temporarily limited in her social, vocational, and recreational endeavours. The reported activity limitations in these domains were commensurate with the type of injuries Ms. Grabovac suffered to her neck and back in the first subject motor vehicle accident. On balance of all the evidence, it is my opinion that Ms. Grabovac had made a full symptomatic and functional recovery with respect to the neck and back injuries she had

suffered in the August 2015 motor vehicle accident prior to the second subject motor vehicle accident of February 2018.

Based on today's obtained history and review of the forwarded clinical records, Ms. Grabovac incurred additional injuries to her neck and back as a result of the February 2018 motor vehicle accident. Ms. Grabovac had MRI scans of her neck and back after the 2018 motor vehicle accident, which showed minor disc changes. It is my opinion that these reported findings are incidental and of not clinical significance.

On balance of all the evidence, it is my opinion that Ms. Grabovac's neck, shoulder girdle, and back injuries pertaining to the second subject motor vehicle accident were once again limited to soft tissue structures such as muscles, tendons, and ligaments. It is my opinion that the second subject motor vehicle accident was not associated with a traumatic brain injury, an injury to the spinal cord, or an injury affecting any of the cervical, thoracic, or lumbosacral nerve roots.

Since the second subject motor vehicle accident, Ms. Grabovac reportedly has experienced pain in her right shoulder. In May 2018 Ms. Grabovac underwent an MR arthrogram of the right shoulder in conjunction with administration of an anaesthetic, which reportedly caused temporary aggravation of her right shoulder pain. The MR arthrogram of the right shoulder did not disclose any significant clinically relevant abnormality. Ms. Grabovac's reported response to intra-articular administration of an anaesthetic agent indicates that her right shoulder was not the source of pain generation. Subsequent to this imaging study, Dr. Liam performed subacromial injection of cortisone under imaging guidance, which reportedly precipitated worsening right shoulder pain. Accordingly, this would have to be interpreted as a negative pain ablation test.

According to today's assessment and review of the forwarded clinical records, it is my opinion that Ms. Grabovac's right shoulder pain is not accounted for by adhesive capsulitis, frozen shoulder, a SLAP lesion, rotator cuff impingement, shoulder instability, or acromioclavicular joint separation.

Today Ms. Grabovac complained of sensorimotor symptoms affecting her right upper extremity. Today's assessment did not reveal evidence of cervical myelopathy, cervical radiculopathy, thoracic outlet syndrome, or peripheral nerve entrapment neuropathy. The reported right upper extremity symptoms and reported tremor are probably part-and-parcel of Ms. Grabovac's reported recalcitrant right upper quadrant pain complaints.

Ms. Grabovac reportedly has been experiencing pain in her left hip girdle region since the subject motor vehicle accident. An MR arthrogram of the left hip joint did not disclose any abnormality. In particular, there was no imaging evidence of a labral tear. Today's

examination was not indicative of pelvic malalignment or sacroiliac joint dysfunction. There was no clinical evidence of left piriformis syndrome.

Today Ms. Grabovac presented with multifocal pain. Her neck, back, and shoulder girdle symptoms are nonspecific. As alluded to above, I do not think that her reported right shoulder and left hip pains reflect an intrinsic joint abnormality. No neurogenic cause regarding Ms. Grabovac's multisite pains was identified.

On balance of all the evidence, I think that Ms. Grabovac has developed a somatic symptom disorder, which to a significant degree is influenced by her psychological and emotional reaction to her circumstances. It is well recognized that anxiety and mood dysfunction can lower the pain threshold and amplify disability.

Various psychiatric diagnoses have been entertained in reference to the two subject motor vehicle accidents. Evaluation and treatment of psychiatric conditions is outside the realm of my expertise. This particular issue would best be discussed by a psychiatrist or psychologist.

With respect to future management, I recommend a several times weekly exercise program. To the present, Ms. Grabovac has received extensive input from allied healthcare providers with respect to the implementation and maintenance of such an exercise program. This notwithstanding, I would not be averse to a few additional treatment sessions to ensure Ms. Grabovac performs appropriate exercises with proper technique.

In addition, Ms. Grabovac should consider participation in Tai Chi, yoga, Pilates, or aqua exercises.

According to today's assessment, no additional imaging studies of the head, neck, back, right shoulder, or left hip are indicated.

I do not recommend additional interventional therapies such as trigger point injections, prolotherapy, or lumbar epidural steroid injections.

I do not recommend passive treatments such as physical modalities, chiropractic spinal adjustments, or massage.

In conjunction with a functional restoration program, Ms. Grabovac should be encouraged to gradually resume her pre-second subject motor vehicle accident domestic responsibilities. This should be considered part-and-parcel of her rehabilitation program. This functional restoration program should be coupled with psychological treatment sessions that address lifestyle and adjustment issues. Future psychotherapy should also

include familiarizing Ms. Grabovac with cognitive behavioural pain management strategies.

It is my opinion that Ms. Grabovac's reported cognitive challenges since the second subject motor vehicle accident are not attributable to a traumatic brain injury. It is my opinion that her reported cognitive challenges are accounted for by confounding factors such as dealing with chronic pain, sleep disturbance, and unresolved mental health issues. It is well-recognized that any of these factors in combination or isolation can interfere with normal mental processing.

Based on today's obtained history and review of the forwarded clinical records, it is my opinion that Ms. Grabovac's reported abrupt decline in function post-second subject motor vehicle accident and resultant reported ongoing social, vocational, and recreational activity limitations are solely attributable to the February 2018 motor vehicle accident.

In the context of today's described clinical course, I would view Ms. Grabovac's prognosis with respect to her chronic pain condition as guarded at this juncture. Based on today's assessment, I do not think that at present Ms. Grabovac has the physical aptitude to work as a dental hygienist or in any occupation of similar physical demands, not even on a part-time basis. Currently I would view Ms. Grabovac not capable of getting back into her pre-subject motor vehicle accident recreational pursuits or performing tasks which are of medium physical demands.

Ms. Grabovac's future vocational and recreational capacity will depend on improvement of her multisite pains as well as unresolved mental health issues. The reported clinical course would suggest that Ms. Grabovac will harbour persistent multisite pains for at least another one to two years and that her multisite pains will be of an intensity that it will continue to negatively impact on her social, vocational, and recreational endeavours. Ms. Grabovac's long-term prognosis regarding competitive gainful employability and capacity to perform the more strenuous physical tasks in and around her home will largely depend on resolution of these factors. At this stage, her long-term prognosis does not look promising.

It is my opinion that Ms. Grabovac is not at risk of developing degenerative arthritis in her neck, back, right shoulder, or left hip in reference to the second subject motor vehicle accident.

I trust this report provides you with the information that you are seeking. Please let me know should you require clarification of any of the opinions expressed in this report.

Yours truly,

Dr. Gabriel Hirsch, Inc.

G. Hirsch, MD, FRCPC
Physical Medicine & Rehabilitation
GH/ds

APPENDIX 1

PRE-AUGUST 2015 MOTOR VEHICLE ACCIDENT HEALTH & FUNCTIONAL STATUS

Ms. Grabovac reported that she was involved in her first motor vehicle accident in 1999. She reportedly suffered soft tissue injuries primarily to her back. She reported that she was a pedestrian struck by a drunk driver. Her mother and sister were injured in the same motor vehicle accident. Following this motor vehicle accident, Ms. Grabovac experienced nightmares and flashbacks, which were rekindled after another motor vehicle accident in 2000. Ms. Grabovac reportedly suffered additional injuries to her back as a result of the 2000 motor vehicle accident.

Ms. Grabovac reported that her back symptoms completely resolved. She reportedly regained full function of her back.

Ms. Grabovac reported that she was involved in another motor vehicle accident in 2010, which triggered mood dysfunction and anxiety. She described this motor vehicle accident as a low speed head-on collision in a parking lot. Ms. Grabovac reported that with respect to the aforementioned three motor vehicle accidents, she had not been assessed or treated by a psychiatrist, psychologist, or counsellor nor had she been prescribed psychoactive medication.

Ms. Grabovac reported that prior to the 2015 motor vehicle accident she would have rated her mood at 8/10, on a scale from 0 to 10, with 10 representing the happiest imaginable emotional state. She reportedly remained apprehensive on the road. She reportedly would have rated her anxiety at 5/10 on average prior to the August 2015 motor vehicle accident, on a scale from 0 to 10, with 10 representing maximum imaginable anxiety.

Ms. Grabovac reported that she had not incurred a fracture or a traumatic brain injury. She reportedly had not previously injured her neck, shoulders, arms, hips, or left leg. Ms. Grabovac reportedly had not been troubled by headaches, neck pain, shoulder girdle pain, pain in her shoulders, arms, or hands, or hip girdle pain.

Ms. Grabovac reportedly sustained an injury to her right anterior cruciate ligament in 2009. She reportedly wore a knee brace for three months. Ms. Grabovac attended physiotherapy. Ms. Grabovac reportedly regained full function of her right knee. Ms. Grabovac reported that prior to the August 2015 motor vehicle accident her right knee was asymptomatic. It did not swell, lock, or buckle.

Ms. Grabovac reportedly felt physically well prior to the August 2015 motor vehicle accident. She reportedly did not experience musculoskeletal or neurologic symptoms. She slept well. Ms. Grabovac was not under the care of any allied healthcare providers. She did not take any prescription drugs.

Ms. Grabovac reported that she and her older sister lived with their parents in a house in Coquitlam. Ms. Grabovac was involved in a relationship. She had no children. Ms. Grabovac did not smoke cigarettes or take any illicit drugs. She drank alcohol occasionally and in moderation.

Ms. Grabovac reportedly participated in domestic tasks, power-washing, and manual snow removal. She reportedly was not responsible for yard-related activities, cleaning the gutters of her parents' house, or home maintenance work/repairs.

Ms. Grabovac reportedly was a member of Fitness 2000 in Burnaby. She exercised in a gym three times per week. Ms. Grabovac reportedly enjoyed snowboarding recreationally approximately ten times per season on local mountains as well as in Whistler.

Ms. Grabovac reportedly completed high school in 2013. She stated that she was on the Honour Roll. Ms. Grabovac reportedly was enrolled in a Bachelor of Arts Program majoring in Psychology at Simon Fraser University for two-and-a-half years. At the time of the August 2015 motor vehicle accident, Ms. Grabovac was a full-time student at the Vancouver College of Dental Hygiene. She reportedly successfully completed the eighteen month program without any delay in January 2017. Ms. Grabovac reportedly commuted to and from school by car. Each commute took approximately 40 minutes.

Ms. Grabovac reportedly was not gainfully employed in any capacity at the time of the August 2015 motor vehicle accident.

MOTOR VEHICLE ACCIDENT OF AUGUST 12, 2015

Ms. Grabovac stated that the accident took place on August 12, 2015, at around 7:00 a.m. Ms. Grabovac reportedly was the properly-restrained driver of a 2012 Toyota Prius, which was repaired at an estimated cost of $4,000. Ms. Grabovac reported that her car was drivable.

Ms. Grabovac reportedly had come to a complete stop at a red light. Her car was rear-ended by another car. Ms. Grabovac did not lose consciousness. Ms. Grabovac reportedly has full recollection of the events surrounding this motor vehicle accident. Ms. Grabovac reportedly did not sustain any cuts nor did she develop any bruises.

Ms. Grabovac reported that on impact her left hand was on the steering wheel and her right hand was resting on her right thigh. Her body and head were fairly straight. Her right foot was on the brake.

Ms. Grabovac reported that her car was pushed forwards, but it did not hit any other objects. She reported that no ambulance, police cruiser, or firetruck were dispatched to the scene of the accident. Ms. Grabovac reportedly did not go to a hospital. Ms. Grabovac reportedly exchanged information with the driver of the other vehicle.

Ms. Grabovac reported that that evening she saw a general practitioner at a walk-in clinic. She reportedly complained of head pain, neck pain, and low back pain.

Ms. Grabovac reported that after this motor vehicle accident she experienced nightmares and flashbacks. Her mood deteriorated. Ms. Grabovac reported that Dr. Parhar prescribed Celexa, which was helpful. Ms. Grabovac reportedly was not referred to a psychiatrist, psychologist, or counsellor.

Ms. Grabovac reported that she was reviewed by Dr. Parhar, her attending family physician, on several occasions with respect to her ongoing multisite axial skeletal pains, mood dysfunction, and anxiety. She reportedly attended treatment provided by a physiotherapist and chiropractor. Ms. Grabovac reportedly was not referred to a specialist physician.

Ms. Grabovac stated that she was involved in a minor motor vehicle accident on September 12, 2015. She reportedly was a passenger in a car, which was struck in a parking lot. The impact was to the driver's side. Ms. Grabovac reported that her pre-existing anxiety and mood issues were amplified as a result of this motor vehicle accident. In addition, she noted worsening of her pre-existing neck pain, back pain, and headaches, which took several months to subside to the baseline pre-September 2015 motor vehicle accident level.

Ms. Grabovac reportedly continued attending treatment sessions with a physiotherapist and chiropractor. She stated that Dr. Parhar did not prescribe a painkiller, anti-inflammatory medication, or muscle relaxant. Ms. Grabovac reportedly used Advil or Robaxacet to mitigate her headaches, neck pain, and back pain.

Ms. Grabovac reported that prior to the 2018 motor vehicle accident, she felt physically perfectly fine. She reportedly no longer harboured headaches, neck pain, or back pain. She reported that her anxiety and depression had resolved. Ms. Grabovac reportedly continued taking Celexa 20 mg once daily prior to the second subject motor vehicle accident. She was not sure whether Wellbutrin had been introduced prior to or after the second subject motor vehicle accident. Ms. Grabovac reported that prior to the 2018 motor

vehicle accident she was not under the care of a specialist physician, mental health care professional, or allied healthcare provider.

Ms. Grabovac reported that after a few months she gradually increased her participation in domestic tasks. She reported that she and her boyfriend rented an apartment in Kitsilano in July 2017. Prior to the 2018 motor vehicle accident, Ms. Grabovac reportedly shared all domestic activities without any limitations with her boyfriend.

Ms. Grabovac reportedly got back into exercising in a gym in 2016. Prior to the 2018 motor vehicle accident, she exercised in a gym three to five times per week. Ms. Grabovac reported that she had resumed snowboarding prior to the 2018 motor vehicle accident. In addition, she had joined a soccer team and a volleyball team, playing recreational soccer and volleyball once per week respectively.

Ms. Grabovac reported that prior to the 2018 motor vehicle accident she was employed as a dental hygienist at a dental office in Richmond and at another dental office in Langley. She reportedly commuted to and from work by car. Ms. Grabovac reportedly worked at least 40 hours per week and some weeks up to 50 hours. Ms. Grabovac reportedly was not employed in any other capacity.

MOTOR VEHICLE ACCIDENT OF FEBRUARY 23, 2018

Ms. Grabovac stated that the accident took place on February 23, 2018, at 5:30 p.m. Ms. Grabovac reportedly was the properly-restrained front seat passenger in a 2016 Jeep Cherokee operated by her older sister. Ms. Grabovac reported that her headrest was adjusted appropriately.

Ms. Grabovac reported that they were driving at an approximate speed of 80 km/hour eastbound on Highway No. 1. It was snowing.

Ms. Grabovac reported that a sedan in front of them hit a patch of ice. It spun and struck the Jeep Cherokee at the right front corner. Ms. Grabovac reported that no airbag deployed.

Ms. Grabovac reported that the right side of her face struck the driver's door window. She reportedly developed bruises in the region of her right cheekbone as well as in her right upper front chest area from contact with the shoulder strap. Ms. Grabovac reportedly did not sustain any cuts.

Ms. Grabovac reported that she has more-or-less full recollection of the events surrounding this motor vehicle accident. She recalls that her body and head jerked towards the right. Ms. Grabovac reportedly remained seated in the Jeep Cherokee until the firemen arrived.

Ms. Grabovac reported that she and her sister were taken in a police cruiser to the fire hall in Surrey. At that location, Ms. Grabovac was assessed by the Emergency Health Services. Ms. Grabovac reportedly was taken by ambulance to the Emergency at Surrey Memorial Hospital. She reportedly experienced neck pain, upper back pain, mid back pain, and low back pain. Ms. Grabovac reportedly was in shock.

Ms. Grabovac recalls being examined in the Emergency at Surrey Memorial Hospital. She reportedly underwent imaging of her head, neck, and back. She was given pain medications.

Ms. Grabovac reported that her neck pain, upper back pain, mid back pain, and low back pain persisted. Within a few days, she noted the new onset of headaches, right shoulder pain extending into her right upper extremity, as well as left hip girdle pain extending into the left leg all the way down into the foot.

In addition, Ms. Grabovac experienced intermittent numbing and tingling sensations in her right arm and hand along the ulnar aspect involving digits 4 and 5. She also experienced intermittent pins and needles sensations and numbness along the back of her left leg all the way down into the foot. Ms. Grabovac reported that the strength in her right arm and hand and left leg were diminished. She stated that her bowel and bladder functions remained intact.

Ms. Grabovac reported that her mood deteriorated. Initially she slept a lot. She reportedly felt fatigued. Ms. Grabovac reported that she experienced nightmares and flashbacks in reference to the 2018 motor vehicle accident. She harboured driving-related anxiety.

Ms. Grabovac reported that after a while her sleep was compromised. She reportedly had a hard time falling asleep and her sleep was interrupted.

Ms. Grabovac reported that she noted a decline of her mentation. Her memory and concentration were impaired. She reported that her cognitive function directly correlated with the intensity of her multisite pains, how well she had slept the previous night, as well as her emotional state.

Ms. Grabovac reported that during the past one-and-a-half years she has not been involved in another motor vehicle accident not has incurred any superimposed musculoskeletal or neurologic injuries during this period.

Ms. Grabovac reported that she was reviewed by her family physician on several occasions. She reportedly attended treatment with several physiotherapists. Rendered treatment included acupuncture. In addition, Ms. Grabovac received input from a massage therapist, personal trainer, and homeopath.

Ms. Grabovac reportedly saw a psychiatrist once. She reportedly has attended psychological treatment sessions to the present.

Ms. Grabovac reportedly was prescribed Celexa and Wellbutrin. In addition, she was given prescriptions for Tylenol No. 3, diclofenac, Vimovo, and Lyrica.

Ms. Grabovac reported that she was referred to Dr. Mian, physiatrist, whom she saw in total three times. Dr. Mian reportedly injected the right shoulder with cortisone, albeit to no avail.

Ms. Grabovac reported that on one occasion Dr. Berghamer performed prolotherapy. She reported that the right shoulder blade region and upper back were injected. These injections reportedly provoked a flare-up of Ms. Grabovac's right-sided posterior shoulder girdle pain.

Ms. Grabovac reported that in October 2019 she was assessed by an orthopaedic surgeon at the request of her family physician. This specialist physician reportedly advised her that her reported hip girdle pain was referred from her low back region.

Ms. Grabovac reported that in October 2018 and May 2019 she was enrolled in an inpatient rehabilitation program in Serbia. She reportedly received intensive physiotherapy, which included ultrasound and laser. In addition, she saw a massage therapist. Ms. Grabovac reported that in Serbia she was evaluated by a physiatrist and two neurologists. She recalled undergoing electrophysiological studies. Ms. Grabovac reportedly had MRI scans of her right shoulder, neck, low back, and left hip in Serbia. She reportedly was told that imaging studies of her spine showed three herniated discs in her neck and one herniated disc in her lumbar spine. The MRI scan of the left hip was reportedly suspicious of an abnormality of the labrum.

Ms. Grabovac reported that she started using a cane in her left hand in February 2018. She reportedly discontinued this assistive walking device in October 2018. Ms. Grabovac reportedly used a sling to support her right arm from June to October 2018.

Ms. Grabovac reported that she had MR arthrograms of her right shoulder and left hip in Vancouver. Following these injections, she reportedly noted temporary flare-up of her right shoulder and left hip pains.

Ms. Grabovac reported that with respect to her mood dysfunction and anxiety, to the present she has not made any symptomatic gains. With respect to her physical state, she reportedly has made a 28% recovery to the present. Ms. Grabovac reported that during the

past one-and-a-half years her primary physical concerns pertained to neck pain, right shoulder pain, low back pain, and left hip pain.

PRESENT TREATMENT

Ms. Grabovac reported that she sees Dr. Parhar every six weeks and her psychologist once every two weeks. At present Ms. Grabovac is not under the care of a specialist physician.

Ms. Grabovac reported that she attends massage therapy once weekly. Ms. Grabovac reportedly is no longer under the care of a chiropractor, personal trainer, or homeopath.

Ms. Grabovac reported that she has stopped aqua exercises. At present she performs a home-based exercise program most days. It takes her 15 minutes to complete a stretching exercise routine according to the instructions provided by her therapists.

Ms. Grabovac reported that at present she attends physiotherapy treatment sessions three times per week. Rendered treatment includes acupuncture, application of heat packs, and electrotherapy. Ms. Grabovac reportedly exercises for one hour at this physiotherapy clinic.

Ms. Grabovac takes Lyrica 100 mg twice daily, citalopram 20 mg once daily, and Wellbutrin 300 mg once daily.

Ms. Grabovac reported that she uses Advil for recurrent headaches three times per week. She takes the occasional diclofenac to mitigate her neck pain, back pain, shoulder pain or hip pain.

Ms. Grabovac reported that no additional investigations, appointments with other specialists, or other treatments are pending.

SOCIAL HISTORY AND FUNCTIONAL STATUS POST-2018 MOTOR VEHICLE ACCIDENT

Ms. Grabovac reported that due to her limited financial resources, she had to move back into her parents' house in Coquitlam. Ms. Grabovac reported that in essence she has not participated in any domestic tasks. At times she cleans dishes. Ms. Grabovac reported that to the present she has not resumed power-washing or manual snow removal.

Ms. Grabovac reportedly received EI benefits for nine weeks. Since then Ms. Grabovac has not had access to any income support. Ms. Grabovac reported that her parents have supported her financially. Ms. Grabovac reportedly has not been receiving long-term disability benefits or social assistance.

Ms. Grabovac reported that to the present she has not been able to resume her pre-2018 motor vehicle accident occupation as a dental hygienist.

Ms. Grabovac reportedly worked as a movie background actor in 2019, but only one day in January, one day in February, one day in March and one day in April.

Ms. Grabovac reported that she drives infrequently. She reported that at present she has nightmares three times per week. She continues to harbour flashbacks pertaining to the 2018 motor vehicle accident. She continues to deal with driving-related anxiety and startling responses on the road.

In addition, Ms. Grabovac reportedly feels anxious "about everything".

Ms. Grabovac reported that after walking ten minutes she prefers to take a break because of low back pain and left hip girdle pain. Her reported standing tolerance is ten minutes due to flare-ups of low back pain and left hip pain.

Ms. Grabovac stated that after sitting for 30 minutes she prefers to adjust her position or get up, move around and stretch her body.

Ms. Grabovac reportedly does not jog or run. She reported that ascending and descending stairs and hills are challenging.

Ms. Grabovac reported that she can kneel or squat, but doing so provokes worsening pain in her low back and left hip girdle area.

Ms. Grabovac reported that her ability to reach with her right arm has remained compromised. She estimated her maximum lifting and carrying capacity at ten pounds.

PRESENT COMPLAINTS

Ms. Grabovac described bitemporal as well as occipital headaches, which occur three to five times per week. The headaches are reportedly provoked by stress and exhaustion. Taking Advil mitigates the headaches. Ms. Grabovac reported that her headaches are of a pressure-like and aching quality. The headaches can be associated with nausea, but they are not accompanied by vomiting.

Ms. Grabovac reported that the hearing in her left ear is slightly impaired. She reported once daily ringing sounds in her left ear lasting for up to 20 minutes. Ms. Grabovac reported that she saw an ENT specialist and that she underwent a hearing test. The hearing test reportedly showed slightly impaired hearing in her left ear.

Ms. Grabovac reported that her facial sensation is intact. She reported that her sense of smell and taste has remained unchanged and normal. Ms. Grabovac reported that she can fully open her mouth and that her jaw does not lock. She reported that she has no difficulty with biting, chewing or swallowing.

Ms. Grabovac reportedly has constant neck pain extending from the base of the skull to the base of the neck equally affecting the left and right side. Ms. Grabovac rated the intensity of her neck pain at 7/10 on average, on a scale from 0 to 10, with 10 representing maximum imaginable pain. She reported that her neck pain intensity fluctuates between 5/10 and 10/10. Aggravating factors include sustained neck position and whenever she tries to be more active.

Ms. Grabovac described constant deep-seated pain in the front of her right shoulder. She reportedly lacks right shoulder mobility. She reported that her right shoulder is stable. Right shoulder movements are not associated with any clicking, grinding, or snapping sound. Ms. Grabovac reported that her right shoulder pain is aggravated by sustained or repetitive use of the right shoulder, reaching with her right arm, as well as lifting, carrying, and pushing and pulling motions.

Ms. Grabovac reported that the right shoulder pain can extend into the right arm along the inner aspect all the way to digits 4 and 5. Ms. Grabovac reported that her right arm and hand strength is diminished. Ms. Grabovac reportedly has intermittent numbing and tingling sensations along the ulnar aspect of her right arm and hand most days.

Ms. Grabovac reported that she has no pain in her left shoulder or left upper extremity. She reportedly has normal strength, feeling, and coordination in her left upper extremity.

Ms. Grabovac reported that her right hand shakes most of the time. She reportedly has not noted any dystrophic skin, nail, or hair changes in her right upper extremity. Ms. Grabovac reported that there is no difference with respect to perspiration of the right hand and fingers in comparison to the left side.

Ms. Grabovac reportedly has constant pain affecting her right shoulder blade area. She also described constant pain in her upper back to a greater extent on the right side than on the left side. Furthermore, she reported constant pain affecting her mid back and low back areas equally on the left side as on the right side. Ms. Grabovac reported that her back pain is aggravated by prolonged sitting and standing, moving her back as well as whenever she tries to be more active. Ms. Grabovac rated the intensity of her back pain at 7/10 on average. She reported that her back pain intensity ranges between 5.5/10 and 10/10.

Ms. Grabovac reportedly has deep-seated pain affecting the posterior aspect of her left hip. The left posterior hip girdle pain is present at all times. The pain extends into the left leg all the way to the sole of the left foot. Ms. Grabovac reportedly has intermittent numbing and tingling sensations in her left lower extremity in the same distribution as her left leg pain. She reported that her left leg is weaker than her right leg.

Ms. Grabovac did not report any sensorimotor symptoms affecting her right lower extremity.

Ms. Grabovac reportedly weighed 125 pounds prior to the 2018 motor vehicle accident. She estimated her present weight at 135 pounds.

Ms. Grabovac described primary and secondary sleep disturbance. She reported that her sleep is interrupted by her multisite pains as well as nightmares. Ms. Grabovac reportedly feels tired on wakening. She reportedly has a nap for 45 to 60 minutes in the afternoon twice per week. Ms. Grabovac reported lack of energy.

Ms. Grabovac reportedly feels frustrated and angry. She rated her mood at 3/10 on average during the past month, on a scale from 0 to 10, with 10 representing the happiest imaginable emotional state. Ms. Grabovac reported that her general anxiety issues and driving-related anxiety have not changed appreciably during the past eighteen months.

Ms. Grabovac reported intermittent word-finding difficulty. She reportedly lacks memory and concentration. Ms. Grabovac acknowledged that her cognitive function directly correlates with her emotional state, multisite pain intensity, as well as how well she has slept the previous night.

PHYSICAL EXAMINATION

Ms. Grabovac walked into my office with a symmetrical, normal gait pattern. She sat throughout the entire interview, but adjusted her position slightly on several occasions. Twice during the interview Ms. Grabovac became visibly emotionally distressed. She started crying. It took her a while to regain her composure.

The interview started at 7:45 a.m. and the examination was completed by 9:40 a.m.

Ms. Grabovac arose cautiously from a chair on completion of the interview. Initially she walked with a slight limp favouring her left lower extremity, but after a few steps her gait became symmetrical once again.

Ms. Grabovac was a good historian. Speech and primary language functions were intact.

Ms. Grabovac was attentive throughout the entire assessment. She was a good historian.

Ms. Grabovac correctly identified the scent of perfume, but not the scent of cinnamon. The pupils were of equal size and reacted equally to direct and indirect light. Visual fields were full on confrontation. There was no evidence of visual extinction. Extraocular movements were full in all directions. Gaze was conjugated with a smooth pursuit. The vestibulo-ocular reflex was intact. Mouth opening was full without deviation of the jaw. The palate moved symmetrically. The tongue protruded in the midline. Labial, lingual, and guttural control was normal. Facial sensation was normal. There was no weakness of the facial muscles. No facial asymmetry was noted. Air conduction was greater than bone conduction. There was no lateralization on Weber testing.

Cerebellar coordination was normal. There were no frontal lobe release signs. Cortical sensation was intact.

An intermittent right hand/finger tremor was noted. The observed tremor was not characteristic of essential tremor.

Muscle bulk, power, and tone were normal in the upper and lower extremities proximally as well as distally. No muscle twitching was seen in the arms, hands, legs, or feet. The deep tendon reflexes including the medial hamstring and hip adductor deep tendon reflexes were symmetrical and normal. The toes were downgoing to plantar stimulation. Power and precision grips as well as manual and finger dexterity were normal on either side.

Pinprick was normally perceived in the arms, hands, legs, and feet. Vibration and position sense were intact in the fingers and toes. Root tension signs (clinical tests for lumbosacral nerve root irritation) were negative. Passive straight leg raising was limited to 65-70 degrees on either side due to hamstring muscle tightness.

Median nerve compression test in conjunction with wrist flexion did not provoke any sensory symptoms in the hands or fingers. Tinel's sign (clinical test for peripheral nerve irritation) was negative at the wrists and elbows. There was no evidence of subluxation or thickening of the ulnar nerve at the cubital tunnel (inner aspect of the elbow) on either side. There was no evidence of a Horner's phenomenon.

There was no clinical evidence of a sensorimotor deficit in the left or right median nerve or ulnar nerve distribution.

Allen's, Adson's, Wright's, Elvey's, and provocative elevation tests did not induce any sensory symptoms in the right arm or hand on direct questioning. The aforementioned thoracic outlet tests were not associated with clinical evidence of venous outflow obstruction or arterial insufficiency in the right upper extremity.

Ms. Grabovac walked a few steps on her heels and toes. She hopped well on her right leg. She elected to place her left hand against the wall when she hopped gingerly a few times on her left leg. The latter activity reportedly induced left-sided posterior hip girdle pain. With minimal support provided by the examiner, Ms. Grabovac performed single leg repetitive heel raising faster on the right side than on the left side. Ms. Grabovac elected to place her right hand onto the examination table while transitioning from standing to squatting. She shifted the majority of her weight onto her right leg. With moderate struggle, Ms. Grabovac was able to arise back to standing without having to rely on her arms.

Ms. Grabovac required moderate assistance provided by the examiner to get from a supine position to a long-legged sitting position. In the long-legged sitting position, she was able to touch her ankles with her fingertips without bending her knees.

Ms. Grabovac stood with her legs fully approximated and her eyes closed without excessive truncal swaying or drift of the outstretched arms. Tandem gait forwards and backwards was performed well. Ms. Grabovac stood on either leg without losing her balance and without evident weakness of the hip abductor muscles.

There were no clinical features indicative of complex regional pain syndrome affecting the right upper or left lower extremity.

Only one (right upper trapezius muscle region) of the characteristic sites associated with a diagnosis of fibromyalgia were reportedly tender during distraction on direct questioning.

On standing, the shoulders and pelvis were level. The thoracic and lumbar spine was straight. No leg length discrepancy was identified while standing, in the recumbent position with the legs straight, or in the long-legged sitting position. The forward curvature of the thoracic spine and the backward curvature of the lumbar spine were normal. There was no step deformity in the lower lumbar spine region. The shoulders drooped mildly to moderately.

Truncal forward flexion was performed without a list. Ms. Grabovac reached to the mid-shin level with her fingertips without bending her knees. The lumbar pelvic rhythm (synergistic movement of the low back and pelvis) was normal during forward flexion of the trunk and straightening of the back from a forward bent position. Truncal extension exceeded 25 degrees. Truncal extension at the extreme reportedly provoked low back pain. On side flexion, the tip of the middle finger was brought to the outer knee joint line on either side. Truncal side flexion towards the left induced left-sided hip girdle pain. Truncal rotation was 25-30 degrees to either side. Truncal rotation to either side triggered low back pain.

The thoracic and lumbar spine were diffusely tender in the midline. The right parathoracic and left paralumbar regions were reportedly tender. The right anterior and posterior shoulder girdle regions as well as left posterior and lateral hip girdle areas were reportedly diffusely tender. Light pressure also provoked a pain response.

The posterior superior iliac spines were level while sitting and standing with the trunk straight or bent. Symmetrical sacroiliac joint movements were observed during Gillet's test. Left hip flexion in combination with adduction as well as internal and external rotation provoked pain in the left hip girdle area anteriorly as well as posteriorly. Left piriformis tests were negative. Hip range of motion was symmetrical and normal.

Active neck forward flexion was full with the chin touching the chest wall. Active neck extension was 70 degrees. Volunteered active neck rotation was 60 degrees to either side and volunteered active neck side flexion was 35 degrees to either side. In the prone position, Ms. Grabovac was observed to quickly rotate her neck to either side. She rested her head on a pillow with her neck partially extended and fully rotated to either side. No pain mannerisms were observed. In the supine position, passive neck side flexion was 45 degrees to either side without a firm endpoint.

The back of the neck was diffusely tender in the midline. The right posterior paracervical and upper trapezius regions were diffusely tender. Light pressure also invoked a pain response.

Inspection of the shoulder girdle region did not reveal any muscle wasting. Active left shoulder range of motion was unrestricted in all planes. Active right shoulder side flexion and forward flexion was limited to 110 degrees. Active assisted right shoulder forward flexion and side flexion was limited to 150 degrees. External rotation of the right shoulder with the upper arm fully adducted against the body was 50 degrees, identical to the left side. Right shoulder external rotation with the arm held in 90 degrees abduction was 90 degrees, identical to the left side. Right shoulder abduction and forward flexion was actively resisted beyond 150 degrees. Resisted shoulder abduction as well as external and internal rotation revealed good effort, normal power, and was not painful. The right shoulder was stable. There was no evidence of right acromioclavicular joint separation. Hawkins-Kennedy impingement test, Speed test, and O'Brien's tests were negative on the right side. The empty can test reportedly provoked pain in the right shoulder. The front and outer regions of the right shoulder were reportedly diffusely tender.

Range of motion was normal and pain-free at the elbows, wrists, and fingers. The hands could be brought into the full tucked-in and full grip position. Hand attitude was normal on either side.

APPENDIX 2

DOCUMENTS REVIEWED

1. Health Insurance BC
   a) MSP Printout for the period August 12, 2013 to November 12, 2015
   b) MSP Printout for the period August 12, 2015 to September 7, 2016
   c) MSP Printout for the period August 23, 2016 to July 26, 2018
   d) MSP Printout for the period July 27, 2018 to January 11, 2019
   e) MSP Printout for the period January 12, 2019 to October 15, 2019

2. PharmaNet
   a) PharmaNet Printout for the period August 12, 2013 to August 11, 2015
   b) PharmaNet Printout for the period August 12, 2015 to April 19, 2018

3. Pacific Coast Recovery Care (Dr. Gurdeep Parhar)
   a) Various medical/referral notes (5), various dates
   b) Clinical records for the period August 12, 2015 to August 22,2016
   c) Clinical records for the period August 23, 2016 to April 19, 2018
   d) Clinical records for the period April 20, 2018 to January 11, 2019
   e) Medicolegal Report dated May 15, 2019
   f) Clinical records for the period January 12, 2019 to October 15, 2019

4. Dr. Michael Foran, DC
   a) Clinical records for the period August 12, 2015 to September 22, 2016

5. BC-ICE Physio
   a) Clinical records for the period August 12, 2015 to September 27, 2016

6. No Fear Counselling
   a) Counseling Report dated April 25, 2015
   b) Counseling Report dated November 2, 2015
   c) Counseling Report dated February 25, 2016
   d) Clinical records for the period August 12, 2013 to October 18, 2016

7. Surrey Memorial Hospital
   a) Hospital records for the period February 23, 2018 to April 20, 2018
   b) CT Report Head & Cervical Spine dated February 23, 2018
   c) X-ray Report Chest and Thoracic Spine dated February 24, 2018

8. Canadian Magnetic Imaging
   a) MRI Report Cervical Spine dated April 19, 2018
   b) MRI Report Right Shoulder dated May 24, 2018
   c) MRI Report Left Hip dated May 25, 2018

9. Mercy Medical Clinic
   a) Referral note for physiotherapy dated February 28, 2018
   b) Clinical records for the period August 12, 2013 to October 24, 2019

10. Dr. Richard Arseneau
    a) Medicolegal Report dated November 28, 2018

11. Performax Health Group
    a) Clinical records for the period August 12, 2013 to October 28, 2019

12. PhysioWorks (Kits
    a) Clinical records for the period August 12, 2015 to July 26, 2018
    b) Clinical records for the period July 27, 2018 to January 11, 2019
    c) Clinical records for the period January 12, 2019 to October 16, 2019

13. Karp Rehabilitation
    a) Initial Assessment dated March 12, 2019
    b) Clinical records (Pending)

14. Motus Health & Wellness (Dr. Judy Cook)
    a) Clinical records for the period August 12, 2015 to July 26, 2018
    b) Clinical records for the period July 27, 2018 to October 12, 2019

15. Coastal Wellness Centre
    a) Clinical records for the period August 12, 2015 to July 26, 2018
    b) Clinical records for the period July 27, 2018 to October 15, 2019

16. Lifespan Development (Dr. Christopher Jones)
    a) Treatment Plan dated March 12, 2019
    b) Clinical records (Pending)

17. Canadian Pain & Regenerative Institute
    a) Medical note for physiotherapy, undated
    b) Clinical records for the period August 12, 2013 to October 11, 2019

18. Euromedik General Hospital
    a) Hospital records & MRI Reports for the period May 19, 2019 to June 17, 2019

19. JR Rehab Services Inc.
    a) Initial OT Assessment Report dated September 20, 2019
    b) Clinical records for the period August 12, 2013 to October 21, 2019

20. Dr. Arun Jagdeo
    a) Clinical records for the period August 12, 2013 to October 16, 2019

21. Royal Columbian Hospital
    a) Hospital records for the period August 12, 2013 to October 17, 2019

22. Station Square Medical Clinic
    a) Clinical records for the period August 12, 2013 to October 28, 2019

23. Pinetree Medical Clinic
    a) Clinical records for the period August 12, 2013 to October 22, 2019

APPENDIX 3

OPINION REQUESTED

1. A brief summary of your qualifications and an attached copy of your CV.

2. A summary of our client's symptoms and complaints since the accident and at present, including your findings on examination.

3. A description of any treatment, therapy or medication that our client has received to date.

4. Your diagnosis of our client's condition and your opinion regarding whether the above-noted accident was the likely cause of our client's current symptoms and complaints.

5. Your prognosis for recovery and your opinion regarding any disability our client may have relating to his work, recreational or social activities, activities of daily living or household activities. Please address any risks or vulnerability our client may have to future injuries resulting from his current condition or injuries.

6. Your recommendations for further treatment, therapy or medications at present and your opinion regarding any future treatment or care our client may require.

University of British Columbia

Curriculum Vitae for Faculty Members

Date: December 7, 2018
Initial:

FIRST NAME: Gabriel
MIDDLE NAME(S): Hubert

1. **SURNAME:** Hirsch

2. **DEPARTMENT/SCHOOL:** Medicine (Physical Med & Rehab)

3. **FACULTY:** Medicine

   JOINT APPOINTMENTS:

4. **PRESENT RANK:** Clinical Assistant Professor **SINCE:** Jul 1, 1992

5. **POST-SECONDARY EDUCATION**

(a)

University or Institution	Degree	Subject Area	Dates
Munich, West Germany	B.Sc.	Chemistry	28/Apr/1977
Hamburg, West Germany	M.D.		20/Apr/1983
UBC	FRCPC	PM&R	4/Dec/1989

(b) Title of Dissertation and Name of Supervisor

(c) Continuing Education or Training

(d) Continuing Medical Education

(e) Professional Qualifications

1 Rotating Internship, Royal Alexandra Hospital, Edmonton, AB, 1984-1985

2 Residency in Physical Medicine and Rehabilitation: RI, University of Alberta Hospital, Edmonton, AB, July 1985 - June 1986

3 RII - University of British Columbia, Vancouver, BC, July 1986 - June 1985

4 RIII - University of British Columbia, Vancouver, BC, July 1987 - June 1988

5 RIV - University of British Columbia, Vancouver, BC, July 1988 - June 1989

6 Fellow Royal College of Physicians and Surgeons (Canada) - Physical Medicine & Rehabilitation, 1989 - present

6. EMPLOYMENT RECORD

Prior

University, Company or Organization	Rank or title	Dates
UBC - Div of PM&R	Resident	1/Jul/1986 - 30/June/1989
Research Fellowship--WCB		Jul-Dec/1989
UBC	Clinical Instructor	Jan/1990 - June/1992
UBC	Undergraduate Coordinator - Div PM & R	1993 - 1998
GF Strong Rehab Centre	Acquired Brain Injury Medical Manager	Sept/1999-Aug/2001

Present

University, Company or Organization	Rank or title	Dates
George Pearson Centre	Rehabilitation Consultant	1990 - 2015
UBC	Clinical Assistant Professor	1992 - Present

c) Date of granting tenure at UBC:

7. LEAVES OF ABSENCE

University, Company Or Organization at which Leave was taken	Type of Leave	Dates

8. TEACHING

(a) Areas of special interest and accomplishments

1 Seminars
2 Bedside Clinical Examination
3 MSI's/Residents in PM&R

(b) Courses Taught at UBC:

Year	Session	Course Number	Scheduled Hours	Class Size	Hours Taught			
					Lecture	Tutorials	Labs	Other
1991 - 1992	1991 - 1992	Medical Student Year 2 - Clinical Skills II - "The Total Patient"	12/yr					
1991 - 1992	1991 - 1992	Medical Student Year 3 - Third Year Subspecialty Clinic Teaching						
1991 - 1992	1991 - 1992	Medical Student Year 4 - Supervision/instruction of medical	54 hr/yr	6				
1991 - 1995	1991 - 1995	Review of consults and admissions with house staff in hospital	92 hr/yr					
1991 - 1997	1991 - 1997	Review of Consults with Residents in ambulatory setting	69 hr/yr					
1991 - 1997	1991 - 1997	Weekly Ward Rounds with house staff	92 hr/yr					
10/Sept/1991	10/Sept/1991	The Pathophysiology and Treatment of Flexion-Extension	1					
7/Apr/1992	7/Apr/1992	Principles of Management of the Patient with an Acute Spinal Cord	1					
1992 - 1993	1992 - 1993	Medical Student Year 2 - Clinical Skills II - "The Total Patient"	12/yr					
1992 - 1993	1992 - 1993	Medical Student Year 3 - Third Year Subspecialty Clinic Teaching						
1992 - 1993	1992 - 1993	Medical Student Year 4 - Supervision/instruction of medical	54 hr/yr	6				
2/Sept/1992	2/Sept/1992	Exercise to Maintain Mobility and Prevent Contractures	1					

2/Feb/1993	2/Feb/1993	The Clinical Features, Investigation and Treatment of	1					
2/Mar/1993	2/Mar/1993	Resident - Bedside Instruction in Physical	1					
15/June/1993	15/June/1993	The Etiology, Clinical Features and Principles of Localization in	1					
1993 - 1994	1993 - 1994	Medical Student Year 1 - Career Options in Physical Medicine	.5					
1993 - 1994	1993 - 1994	Medical Student Year 2 - Clinical Skills II - "The Total Patient"	12/hr					
1993 - 1994	1993 - 1994	Medical Student Year 3 - Third Year Subspecialty Clinic Teaching						
1993 - 1994	1993 - 1994	Medical Student Year 4 - Supervision/instruction of medical	54 hr/yr	6				
5/Jan/1994	5/Jan/1994	Rehabilitation of the Patient with Rheumatoid Arthritis	1					
27/Apr/1994	27/Apr/1994	The Rehabilitation of the Patient with Cancer	1					
1994 - 1995	1994 - 1995	Medical Student Year 1 - Career Options in Physical Medicine	.5					
1994 - 1995	1994 - 1995	Medical Student Year 3 - Third Year Ambulatory Clinic in Physical	6		1.5/session x 4			
1994 - 1995	1994 - 1995	Medical Student Year 3 - Third Year Subspecialty Clinic Teaching						
1994 - 1995	1994 - 1995	Medical Student Year 4 - Supervision/instruction of medical	63 hr/yr	7				
5/Oct/1994	5/Oct/1994	Resident - Bedside Instruction in Physical	1					

15/Mar/1995	15/Mar/1995	Resident - Bedside Instruction in Physical	1					
1995 - 1996	1995 - 1996	Medical Student Year 1 - Career Options in Physical Medicine	.5					
1995 - 1996	1995 - 1996	Medical Student Year 3 - Third Year Ambulatory Clinic in Physical	6		1.5/session x 4			
1995 - 1996	1995 - 1996	Medical Student Year 3 - Third Year Subspecialty Clinic Teaching						
1995 - 1996	1995 - 1996	Medical Student Year 4 - Supervision/instruction of medical	63 hr/yr	7				
1995 - 1997	1995 - 1997	Review of consults and admissions with house staff in hospital	138 hr/yr					
18/Oct/1995	18/Oct/1995	The Pathophysiology and Treatment of Osteoarthritis of	1					
25/Oct/1995	25/Oct/1995	Resident - Bedside Instruction in Physical	1					
January 1996	January 1996	Rehabilitation of a Patient with a Spinal Cord Injury	1					
27/Mar/1996	27/Mar/1996	Principles of Management of the Patient with Acute Spinal Cord	1					
1996 - 1997	1996 - 1997	Medical Student Year 1 - Career Options in Physical Medicine	.5/session					
1996 - 1997	1996 - 1997	Medical Student Year 3 - Third Year Ambulatory Clinic in Physical	6		1.5/session x 4			
1996 - 1997	1996 - 1997	Medical Student Year 3 - Third Year Subspecialty Clinic Teaching	3		1.5 hr/session x 2			
1996 - 1997	1996 - 1997	Medical Student Year 4 - Supervision/instruction of medical	63 hr/yr	7				

3/Oct/1996	3/Oct/1996	Resident - Bedside Instruction in Physical	1					
16/Oct/1996	16/Oct/1996	Resident - Bedside Instruction in Physical	1					
11/Dec/1996	11/Dec/1996	Common Disorders of Communication after CVA	1					
January 1997	January 1997	Common medical and orthopedic problems in patients with a	1					
2/Apr/1997	2/Apr/1997	Resident - Bedside Instruction in Physical	1					
27/Apr/1997	27/Apr/1997	The Approach to the Management of a Child with a Limp	1					
15/Oct/1997	15/Oct/1997	Resident - Bedside Instruction in Physical	1					
November 1997	November 1997	The Functional Anatomy of the Hand and Common Hand	1					
1/Apr/1998	1/Apr/1998	Resident - Bedside Instruction in Physical	1					
Oct/2000	Oct/2000	Medical Student-Musculoskeletal Teaching Block	1					
Oct/2002	Oct/2002	Medical Student-Musculoskeletal Teaching Block	1					
2000 - 2001	2000 - 2001	Medical Student Year 2 – Clinical Skills			16			
2002 – 2003	2002 – 2003	Medical Student Year 2 – Clinical Skills			9			
2003 – 2004	2003 – 2004	Medical Student Year 2 – Clinical Skills			15			

(c) Graduate Students supervised at UBC:

Student Name	Program Type	Year		Principal Supervisor	Co-Supervisors
		Start	Finish		
Dr. A. Travlos	Resident Research Project: "Steroid Psychosis: A Cause of Confusion on the Spinal Cord Unit"	1993	1993	Dr. G. Hirsch	

(d) Continuing Education Activities

1 1991 - 1992 UBC City Wide Round in Rehabilitation

2 1992 - 1993 UBC City Wide Round in Rehabilitation

3 1993 - 1994 UBC City Wide Round in Rehabilitation

4 1993 - 1994 Medical Grand Rounds: Acute Management of Spinal Cord Injury, University Hospital, Shaughnessy Site

5 1993 - 1997 Preparation and Participation of Annual Examination of Physical Medicine and Rehabilitation residents

6 1994 - 1995 "Rehabilitation: The Final Frontier; Hazards of Space Flight"

7 1994 - 1995 Grand Rounds: "Orthostatis hypotension and autonomic dysreflexia in Spinal Cord Injury," Vancouver Hospital

8 1994 - 1995 UBC City Wide Rounds in Rehabilitation

9 1994 Whiplash, UBC Department of Family Practice, Royal Columbian Hospital

10 3/Aug/1995 Grand Rounds: "Bed Rest and Immobility," Vancouver General Hospital

11 1995 - 1996 UBC City Wide Rounds in Rehabilitation - Osteoporosis in paraplegics,

12 10/June/1996 Medical Review, "Complications of Immobility," American College of Physicians

13 17/Sept/1996 UBC City Wide Rounds in Rehabilitation - "Winging of the Scapula"

14 5/June/1997 Grand Rounds: "Hyperbaric Oxygenation in the Treatment of CNS Injuries," Vancouver General Hospital

15 19/Mar/1997 UBC City Wide Rounds in Rehabilitation - "The Snapping Hip"

16 13/Dec/2000 UBC City Wide Rounds in Rehabilitation - "Acquired Brain Injury- Determining Fitness to Drive"

17 21/Nov/2001 UBC City Wide Rounds in Rehabilitation - 'Lumbar Spinal Stenosis"

18 15/May/2002 UBC City Wide Rounds in Rehabilitation - "Natural History of Lumbar Disc Herniation

19 11/Dec/2002 UBC City Wide Rounds in Rehabilitation - "Your Adolescent Son has Low Back Pain: Reasons for Concern"

20 03/Dec/2003 UBC City Wide Rounds in Rehabilitation - "Frozen Shoulder"

21 23-28/October/2003 American College of Rheumatology CME Certificate - Annual Scientific Meeting, Orlando, FL

22 26/January/2005 Grand Rounds UBC PMR – "Doctor, can lumbar fusion surgery cure my chronic low back pain?"

23 22/March/2006 Grand Rounds UBC Division of PMR - "Low back Pain in the Young Athlete: Tackling Spondylolysis and Spondylolisthesis

24 25/Apr/2007 UBC City Wide Rounds in Rehabilitation – "Neuromuscular Presentations Associated with Uremia"

25 31/Jan/2007 – Academic Half Day UBC PMR – "Exam of the Knee"

26 17/October/2007 Quality Improvement Rounds – "Traumatic Brachial Plexopathy"

27 07/November/2007 – Academic Half Day UBC PMR – "Low Back Pain"
28 06/May/2009 UBC City Wide Rounds in Rehabilitation – "Vertebroplasty"
29 02/September/2009 – Academic Half Day UBC PMR – "Cognitive Examination"
30 21/October/2009 – Quality Improvement Rounds UBC PMR – "Stretch Your Wallet – Would You Refer Your Patient for Low Back Traction?"
31 20/January/2010 – Academic Half Day UBC PMR – "Pressure Ulcer"
32 08/December/2010 – City Wide Rounds UBC PMR – "Rip It Like Beckham"
33 05/January/2011 – Academic Half Day UBC PMR – "Back Exam"
34 15/June/2011 – Quality Improvement Rounds UBC PMR – "Platelet Rich Plasma Therapy"
35 10/August/2011 – Academic Half Day – "Business Practice Management"
36 08/February/2012 – Academic Half Day – "Pressure Ulcers"
37 20/November/2013 – Shoulder Teaching Session for Residents
38 05/February/2014 – Update on Mitochondrial Disease

(e) Visiting Lecturer (indicate university/organization and dates)

(f) Other

9. SCHOLARLY AND PROFESSIONAL ACTIVITIES

(a) Areas of special interest and accomplishments

1 Special interest in medical and rehabilitation management of spinal cord injured patients.
2 Special interest in the use of objective measuring tools to measure biomechanics of abnormal gait and effects of therapeutic interventions.
3 Special interest in the management and predicting outcome of chronic back pain patients.

(b)+(c) Research or equivalent grants/contracts (indicate under COMP whether grants were obtained competitively (C) or non-competitively (NC))

Grant

Granting Agency	Subject	COMP	$ Per Year	Year	Principal Investigator	Co-Investigator(s)

Contract

Granting Agency	Subject	COMP	$ Per Year	Year	Principal Investigator	Co-Investigator(s)

Salary Support Award

Granting Agency	Subject	COMP	$ Per Year	Year	Principal Investigator	Co-Investigator(s)

(d) Invited Presentations

(e) Other Presentations

(f) Other

(g) Conference Participation (Organizer, Keynote Speaker, etc.)

10.1 SERVICE TO THE UNIVERSITY

(a) Memberships on committees, including offices held and dates

Local

1 Undergraduate Program Coordinator, Vancouver Hospital & Health Sciences Centre, 1993 to 1998

2 Wound Committee, Vancouver General Hospital, 1995 to 1997

3 Residency Training Committee, G.F. Strong Rehabilitation Centre, since October 2002 to 2008

(b) Other service, including dates

10.2 SERVICE TO THE HOSPITAL

(a) Memberships on committees, including offices held and dates

(b) Other service, including dates

11. SERVICE TO THE COMMUNITY

(a) Memberships on scholarly societies, including offices held and dates (National)

1 Fellow, Royal College of Physicians & Surgeons of Canada

2 Member, Canadian Association of Physical Medicine and Rehabilitation

(a) Memberships on scholarly societies, including offices held and dates (Provincial)

3 Member, BCMA

4 Member, College of Physicians & Surgeons of British Columbia

5 Member, Society of Specialists, Physicians and Surgeons of British Columbia

(b) Memberships on other societies, including offices held and dates (Local)

6 Economics representative, Section of PM&R, 1991 - 2009

7 Chair, Section of Physical Medicine and Rehabilitation, 1994 - 2009

(d) Memberships on other committees, including offices held and dates (Provincial)

8 Member, Medical Advisory Committee, BC Rehabilitation Society, 1996 - 1999

12. AWARDS AND DISTINCTIONS

(a) Awards for Scholarship (indicate name of award, awarding organizations, date)

1 Winner of Truelove Award for Physical Medicine and Rehabilitation - June 1989

2 Certificate of Achievement – UBC Division of Physical Medicine & Rehabilitation "Best Annual Physical Medicine & Rehabilitation Award for City Wide Rounds Presentation May 2005 – May 2006"

3 Certificate of Achievement – UBC Division of Physical Medicine & Rehabilitation – Duncan Murray Award for Excellence in Teaching – May 2009

4. Certificate from the Medical Staff and the Hospital, Vancouver-Acute Services in recognition of twenty years of service to the hospital and its patients – June 2012

13. OTHER RELEVANT INFORMATION (Maximum One Page)

University of British Columbia

Publications Record

Date: December 7, 2018
Initial:

FIRST NAME: Gabriel
MIDDLE NAME(S): Hubert

1. SURNAME : Hirsch

Publications

01. Refereed Publications

(a) Journals

1 Hirsch GH, Menard MR , Anton HA. Anemia After Traumatic Spinal Cord Injury. Archives of Physical Medicine and Rehabilitation, 72, No.3:195-201, 1991.*

2 Hirsch GH, Beach G, Cooke C, Menard MH, Locke S. Relationship of Performance on Lumbar Dynanometry to Waddell Score in a Low Back Pain Population. Spine 16, 9: 1039-1043, 1991.*

3 Cooke C, Menard M, Beach G, Locke S, Hirsch GH. Serial Lumbar Dynanometry in Low Back Pain. Spine 17, 6:1039-43, June 1992.

4 Cooke C, Menard M, Beach G, Locke S, Hirsch GH. Serial Dynanometry in Low Back Pain. Spine 17,6:1039-43, June 1992.

5 Travlos A, Hirsch GH. Steroid Psychosis: A Cause of Confusion on the Spinal Cord Unit. Archives of Physical Medicine and Rehabilitation, 74(3): 312-315, March 1993.

6 Hirsch GH, McBride M, Murray DD, Sanderson D, Dukes I, Menard M. Chopard Prosthesis and Semirigid Foot Orthosis in Traumatic Forefoot Amputation. American Journal of Physical Medicine and Rehabilitation 75 (4):1-9, July/August 1996.