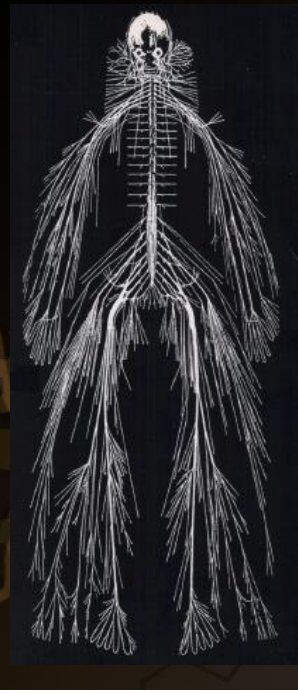

Predicting prognosis in whiplash injury

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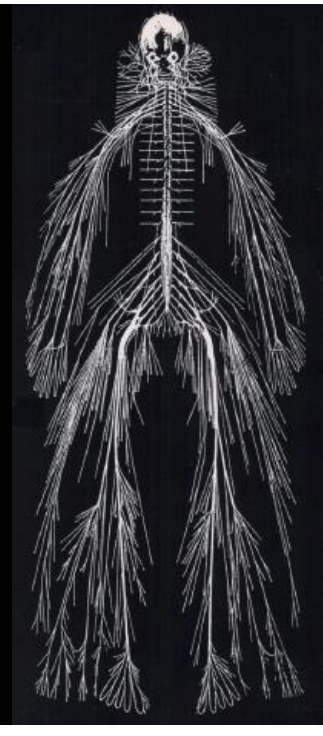
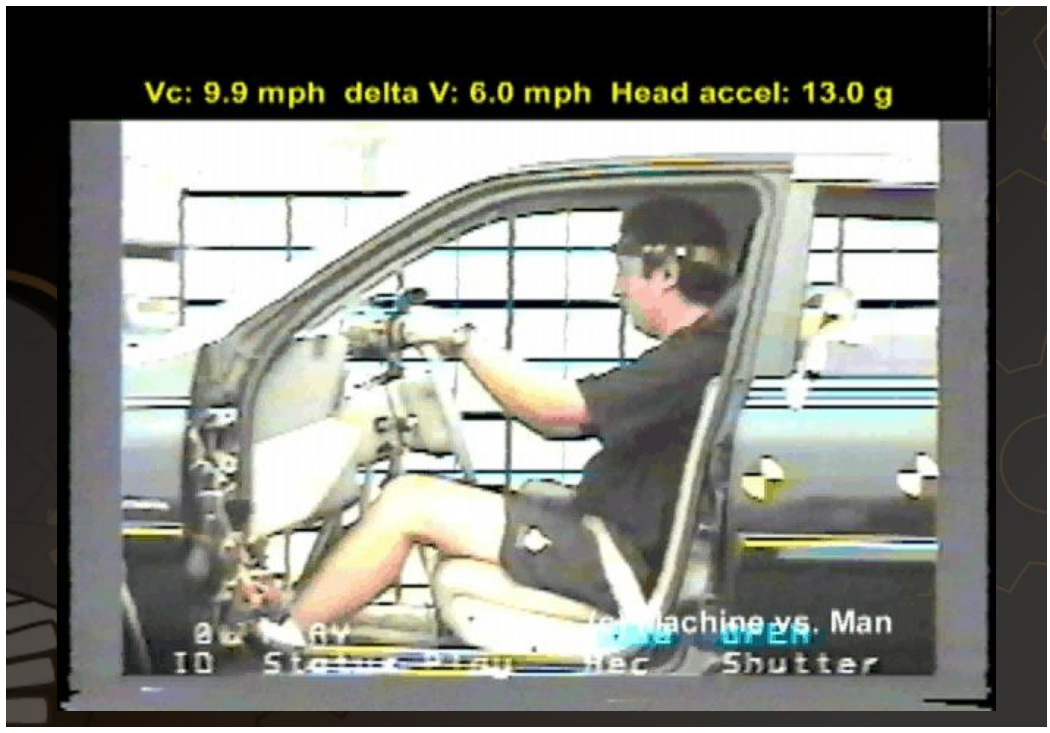


Predicting prognosis in whiplash injury

Prognosis:

Greek πρόγνωσις

“Fore-knowing, foreseeing”



Predicting prognosis in whiplash injury

- What are the salient clinical features?
- *When to test ?*
- Level of confidence?
- *Generalise to other conditions ?*

Whiplash – Clinical Features

Pain
Disability
Psychological distress
Dizziness

Whiplash – Clinical Features

Oculomotor control
Proprioception
Postural stability
Motor control / ROM
Sensory change

Images courtesy of rehabmypatient.com

Pain and Disability

- Pain
  - Numerical Pain Rating Scale (Jensen et al 1986)
  - Neuropathic Pain (Score 12 or more on S-LANSS) (Bennett et al 2005)
- Disability
  - Neck Disability Index (Vernon and Mior 1991)

Initial high levels of pain and disability are strong predictors of poor recovery.

Neuropathic pain: S-LANSS

Self report – Leeds Assessment of Neuropathic Signs and Symptoms

Score of 12 or more indicates possible neuropathic pain.

30% of acute whiplash patients have neuropathic pain component (Sterling et al 2008b).

2. Does the painful area change colour (perhaps looks mottled or more red) when the pain is particularly bad?

a) NO - The pain does not affect the colour of my skin (0)
b) YES - I have noticed that the pain does make my skin look different from normal (5)

3. Does your pain make the affected skin abnormally sensitive to touch? Getting unpleasant sensations or pain when lightly stroking the skin might describe this.

a) NO - The pain does not make my skin in that area abnormally sensitive to touch (0)
b) YES - My skin in that area is particularly sensitive to touch (3)

4. Does your pain come on suddenly and in bursts for no apparent reason when you are completely still? Words like 'electric shocks', jumping and bursting might describe this.

a) NO - My pain doesn't really feel like this (0)
b) YES - I get these sensations often (2)

Pain and Disability

- Pain
  - Numerical Pain Rating Scale (Jensen et al 1986)
  - Neuropathic Pain (Score 12 or more on S-LANSS) (Bennett et al 2005)
- Disability
  - Neck Disability Index (Vernon and Mior 1991)

Initial high levels of pain and disability are strong predictors of poor recovery.

Pain and Disability: Neck Disability Index

Section 1- Pain intensity

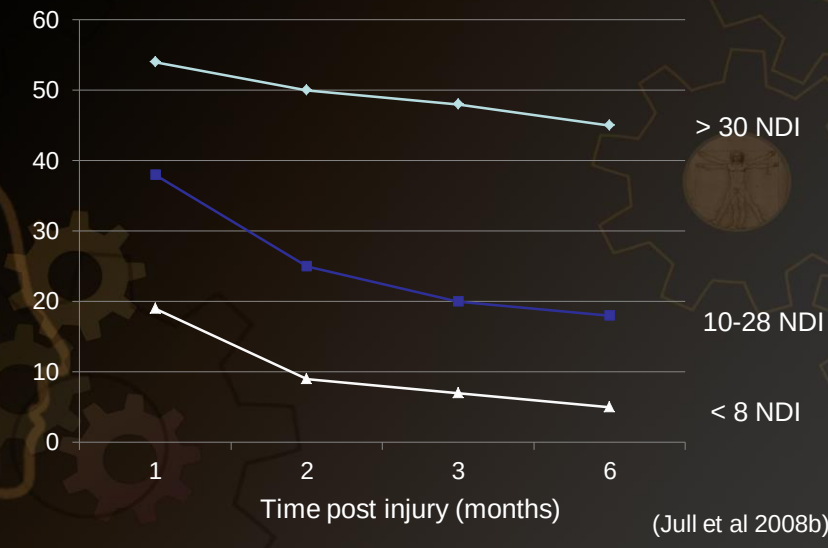
I have no pain at the moment	(0)
The pain is very mild at the moment	(1)
The pain is moderate at the moment	(2)
The pain is fairly severe at the moment	(3)
The pain is very severe at the moment	(4)
The pain is the worse imaginable at the moment	(5)

Section 2 – Personal care (washing, dressing, etc)

I can look after myself normally without causing extra pain
I can look after myself normally but it causes extra pain
It is painful to look after myself and I am slow and careful
I need some help but manage most of my personal care
I need help every day in every aspect of self-care
I do not get dressed, I wash with difficulty and stay in bed

Vernon and Mior 1991

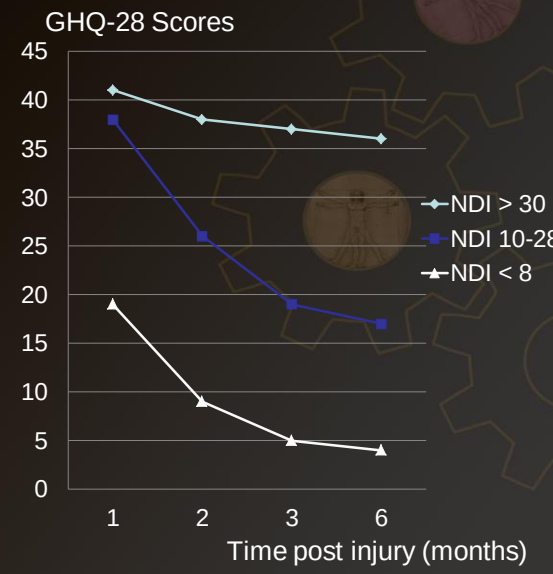
High initial scores in Neck Disability Index: poor recovery



(Jull et al 2008b)

Psychological impairment in whiplash

- Ongoing psychological distress appears to be dependent upon symptom persistence



Psychological impairment in whiplash

- Catastrophising is a significant predictor of poor outcome (Walton et al 2009)
- Fear of movement and re-injury mediates relationship between pain and disability (Kamper SJ et al 2013)
- Early acute post-traumatic stress reaction strongest psychological predictor of outcome as measured by the Impact of Event Scale (Williamson et al 2008, Sterling et al 2003c)

Psychological impairment: Pain Catastrophising Scale

Number	Statement	Rating
1	I worry all the time about whether the pain will end.	
2	I feel I can't go on.	
3	It's terrible and I think it's never going to get any better	
4	It's awful and I feel that it overwhelms me.	
5	I feel I can't stand it anymore	
6	I become afraid that the pain will get worse.	
7	I keep thinking of other painful events	
8	I anxiously want the pain to go away	
9	I can't seem to keep it our of my mind	
10	I keep thinking about how much it hurts.	
11	I keep thinking about how badly I want the pain to stop	
12	There's nothing I can do to reduce the intensity of the pain	
13	I wonder whether something serious may happen.	

NOTE: score > 30 clinically relevant catstrophising

Sullivan MJ, Adams H, Martel MO, Scott W, Wideman T. Catastrophising and perceived injustice: risk factors for the transition to chronicity after whiplash injury. Spine 2011;36(25 Suppl.):S244e9.

Psychological impairment: Fear of movement & re-injury

Tampa Scale for Kinesiophobia
(Miller , Kori and Todd 1991)

1 = strongly disagree
2 = disagree
3 = agree
4 = strongly agree

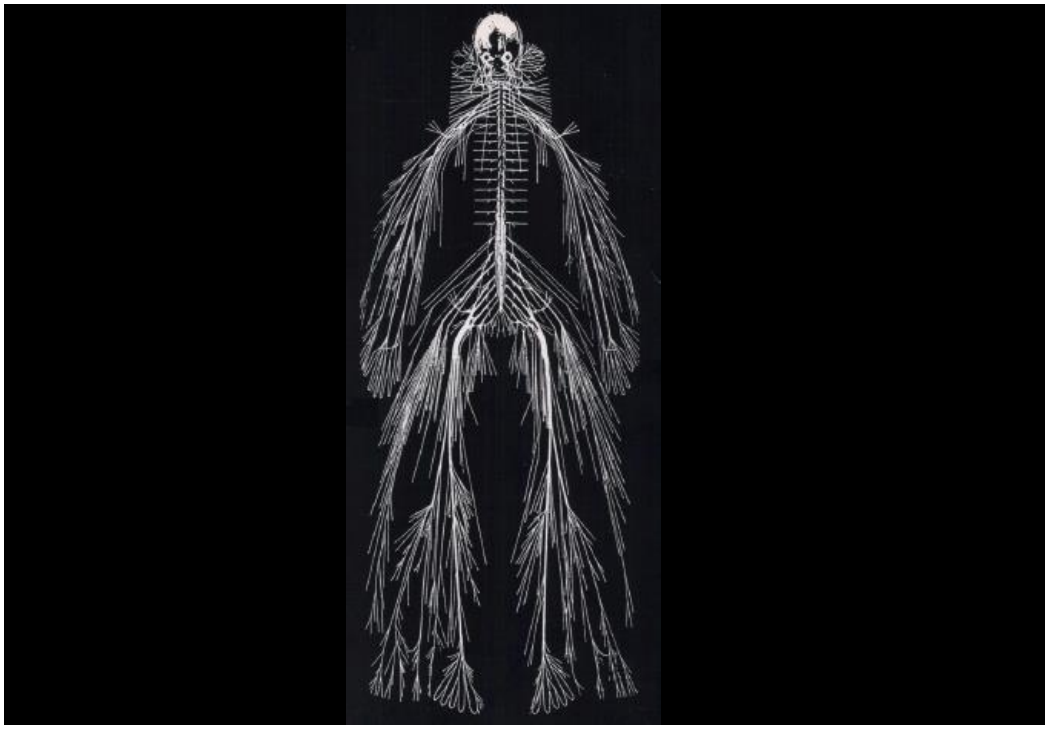
1. I'm afraid that I might injury myself if I exercise	1	2	3	4
2. If I were to try to overcome it, my pain would increase	1	2	3	4
3. My body is telling me I have something dangerously wrong	1	2	3	4
4. My pain would probably be relieved if I were to exercise	1	2	3	4
5. People aren't taking my medical condition seriously enough	1	2	3	4
6. My accident has put my body at risk for the rest of my life	1	2	3	4
7. Pain always means I have injured my body	1	2	3	4

NOTE: score of 37 differentiates between high and low

Psychological impairment: Impact of Event Scale

I thought about it when I didn't mean to
I avoided letting myself get upset when I thought about it or was reminded of it
I tried to remove it from memory
I had trouble falling asleep or staying asleep, because of pictures or thoughts about it that came into my mind
I had waves of strong feelings about it
I had dreams about it
I stayed away from reminders of it

Horowitz et al 1979



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Observational Study

Cervical Radiofrequency Neurotomy Reduces Psychological Features in Individuals with Chronic Whiplash Symptoms

Ashley D. Smith, PT[1], Gwendolen Jull, PT, PhD[1], Geoff Schneider PT, PhD[2], Bevan Frizzell, MD[2], Robert Allen Hooper, MD[2], Rachael Dunne-Proctor, PhD[3], and Michele Sterling, PT, PhD[4]

From: [1]Division of Physiotherapy, NHMRC Centre of Clinical Excellence Spinal Pain, Injury and Health, University of Queensland, Brisbane, Australia; [2]Faculty of Medicine, University of Calgary; [3]Centre of National Research on Disability and Rehabilitation; University of Queensland, Brisbane, Australia; [4]Centre of National Research

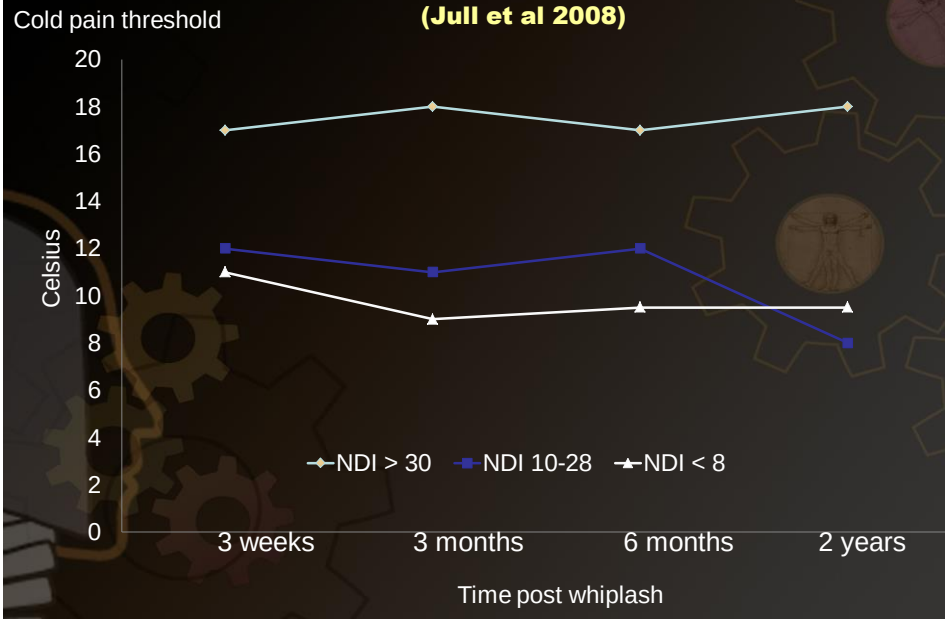
Background: Individuals with chronic whiplash associated disorder (WAD) demonstrate various psychological features. It has previously been demonstrated that cervical radiofrequency neurotomy (cRFN) resolves psychological distress and anxiety. It is unknown if cRFN also improves or reduces a broader spectrum of psychological substrates now commonly identified in chronic whiplash, such as post-traumatic stress disorder (PTSD) and pain catastrophizing.

Objectives: To determine if reducing pain in the cervical spine (following cRFN) significantly reduces psychological features (distress, pain catastrophizing and post-traumatic stress symptoms) in individuals with chronic WAD.

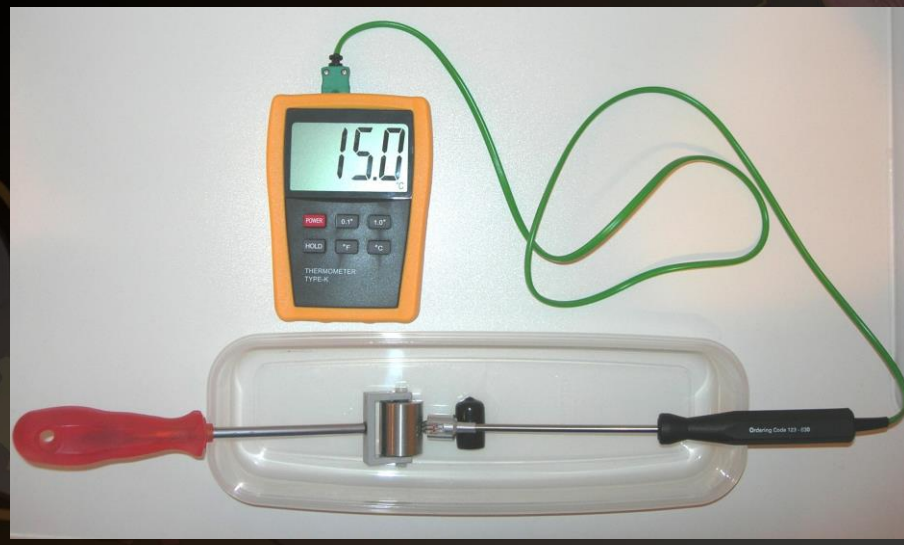
Sensory changes in whiplash

- Hyperalgesia on manual examination
- Reduced pressure pain threshold in neck and at remote sites (eg Tibialis Anterior) (Sterling et al 2005).
- Altered cold pain threshold – thermorollers. (Williams et al 2007, Sterling et al 2008a).

Means for cold pain threshold: classified at 2 years by NDI scores (Jull et al 2008)



Sensory changes in whiplash: cold hyperalgesia



Sensory changes in whiplash: cold hyperalgesia

Clinical Assessment: Assessing Risk of Poor Recovery

- Pain => 8/10 / SLANNS =>12
  - Surrogate 'electric shock-like pain that comes in bursts.'
  - 'burning pain in the neck.'
- Post Traumatic Stress / Impact of Event Scale >25
  - Surrogate 'Intrusive thoughts / nightmares.'
- Neck Disability Index
  - > 30% (out of 100)
- Cold pain threshold: u/s gel, ice cube test.
- Pressure pain threshold: neck & anterior shin.
- Bilateral restriction in ULTT 4/10 VAS @ =<150 degs.

Clinical Assessment: assessing risk of poor recovery

	Domain	Instrument	Cut Off	Notes
Subjective:	Age		>40 years	
	Disability	Neck Disability Index	> 30 / 100	
	Pain	Numerical Pain Rating Scale	> 8/10	
	PTSS	Impact of Event Scale	=>26 (mod)	Allow 4-6 weeks post injury to settle
	Neuropathic Pain	S-LANSS	=>12	
Objective:	Sensory	ULTT	<150° bilateral VAS > 4	Often unexpected finding
	Sensory	Cold Hyperalgesia	>15°C	Ice / Thermoroller

(Sterling et al 2006)

Disability, pain & sensory impairment

Less complex Whiplash

NDI < 28/ 100
Motor deficits
Local hyperalgesia – neck
Psychological distress

Complex Whiplash

NDI > 30/ 100
Motor deficits
Widespread hyperalgesia
Cold hyperalgesia
Post-traumatic stress symptoms
Psychological distress

(Sterling & Kenardy 2008b)
(Worsfold 2014)

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Review

When range of motion is not enough: Towards an evidence-based approach to medico-legal reporting in whiplash injury

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ABSTRACT

Whiplash injury medico-legal reporting has traditionally been focused upon identifying restrictions in range of motion and identifying the presence of tender areas in the cervical spine in an effort both to diagnose the condition and to offer a prognosis. There have been considerable advances in this field over the last decade however that calls into question such a diminutive approach. This paper reviews the contemporary evidence base for the medico-legal assessment of whiplash injury and identifies a body of literature that strongly implicates a Claimant's physiological and psychological stress response as a key medico-legal marker in predicting prognosis following whiplash injury.

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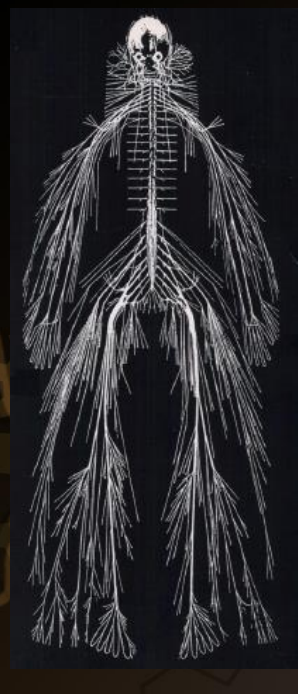
Predicting prognosis in whiplash injury

- Triage role: identify complex patient.
- Intervene @ 6/52
  - CBT / EMDR for PTSD
  - 'Psychologically informed' physiotherapy for catastrophisation / fear of movement.
  - Neuropathic pain medication
- Do not ignore pain generators.

Predicting prognosis in whiplash injury

- What are the salient clinical features?
- *When to test ?*
- Level of confidence?
- *Generalise to other conditions ?*



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