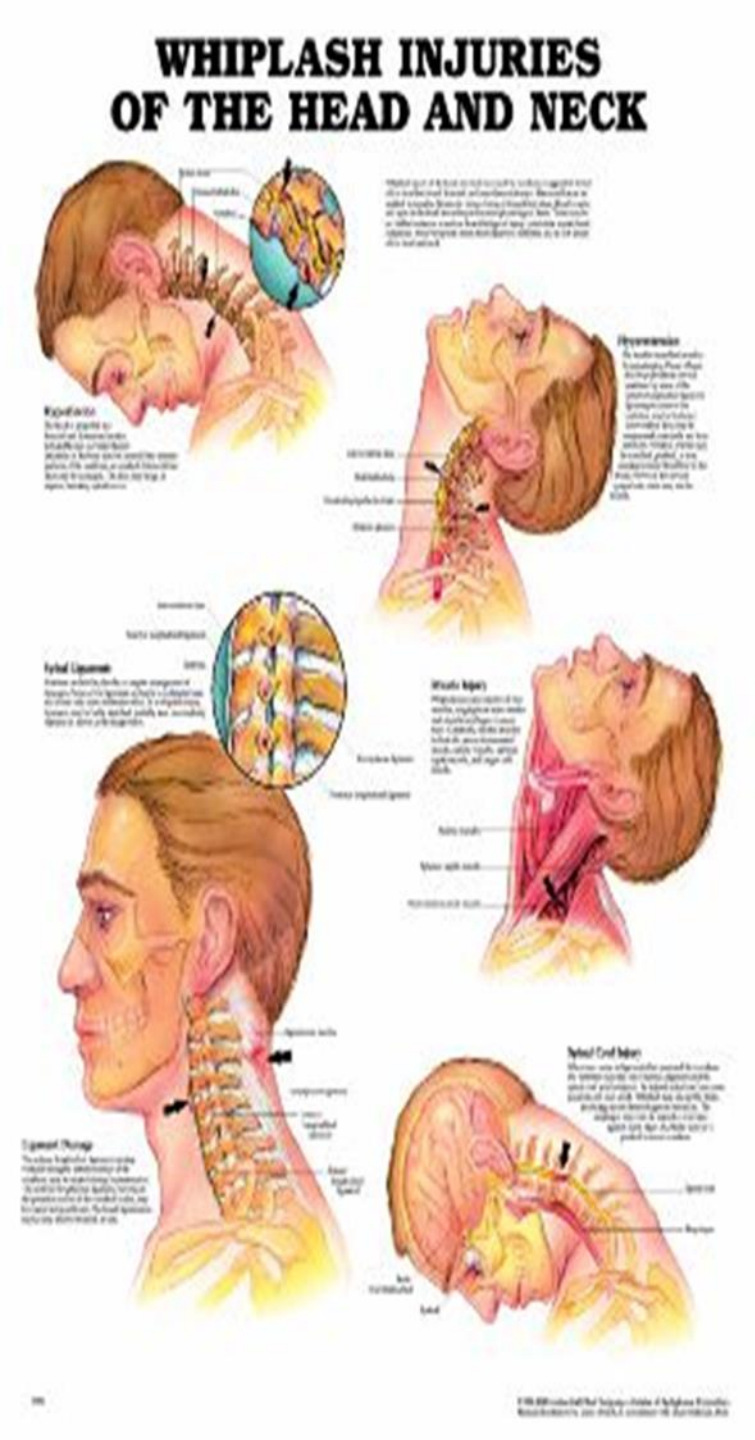
Mod 2

MMT Course

Whiplash



MMT Initial Statement

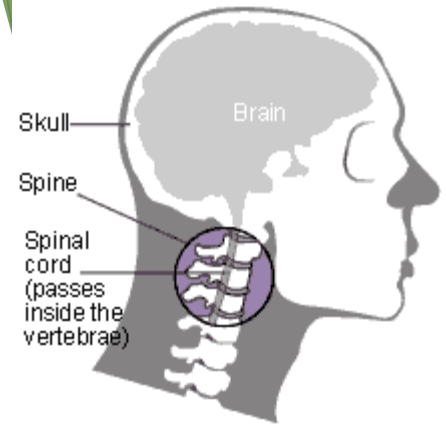
While a majority of peoples pain with whiplash improve within one month, symptoms sometimes persist longer.

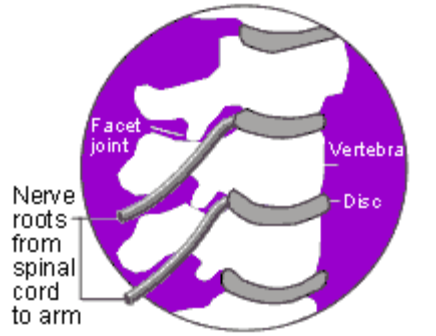
Most therapists agree that the sooner massage therapy is received, the quicker the person heals and the less likely they are to develop chronic neck pain.

In general, any massage that relaxes the affected muscles will help relieve the pain and discomfort of whiplash.

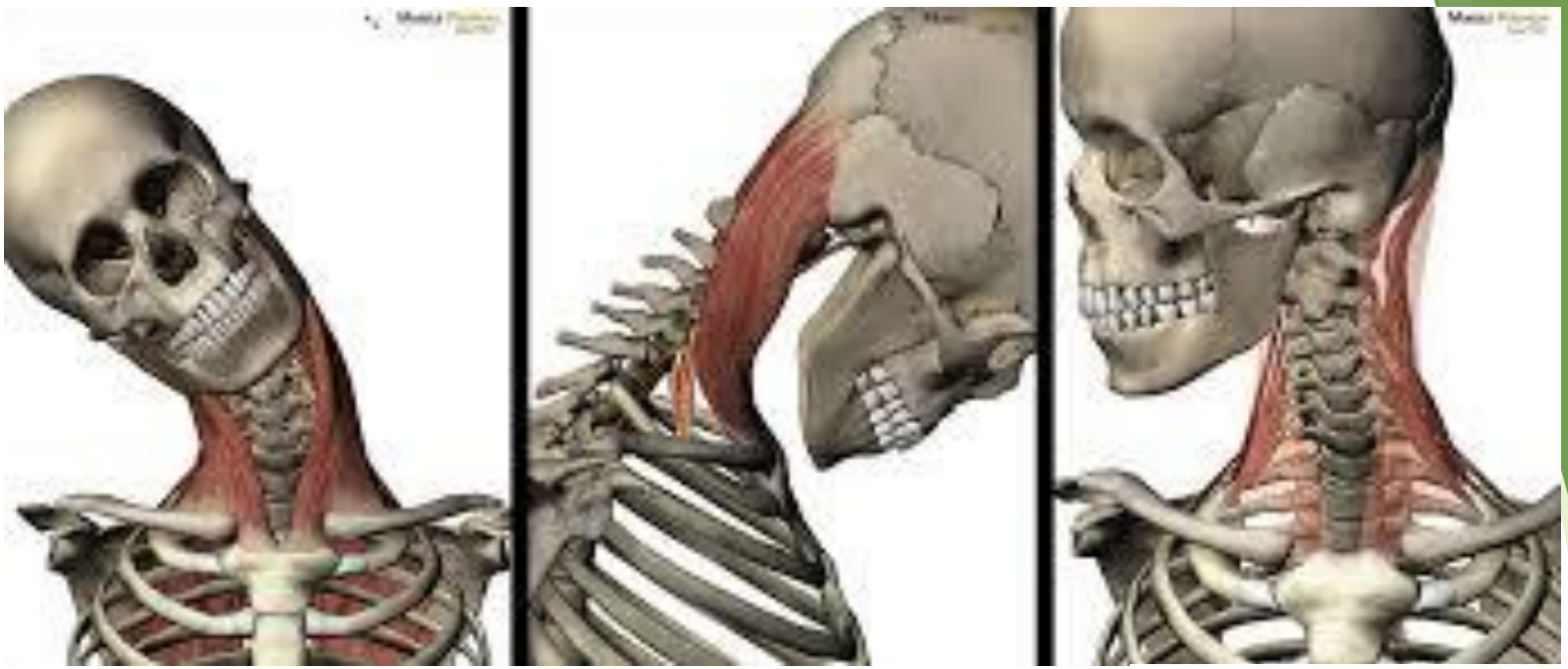
Myths about Whiplash

1. “Whiplash Personality”
2. Malingering (for monetary gain) is common
3. Illness & Disability are biological phenomena
4. Men are more vulnerable than women
5. Direct impact upon neck is necessary for WAD
6. X-ray shows nothing so no WAD
7. Complaints are psychosomatic
8. Rest, time, muscle relaxants and tranquillisers cure the distress
9. Seatbelts would prevent injury

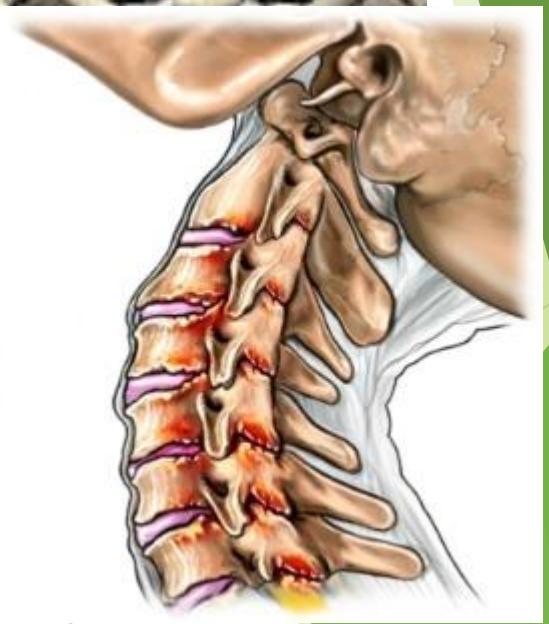




A cross-section of the head and neck with part of the spine shown magnified



Types of whiplash



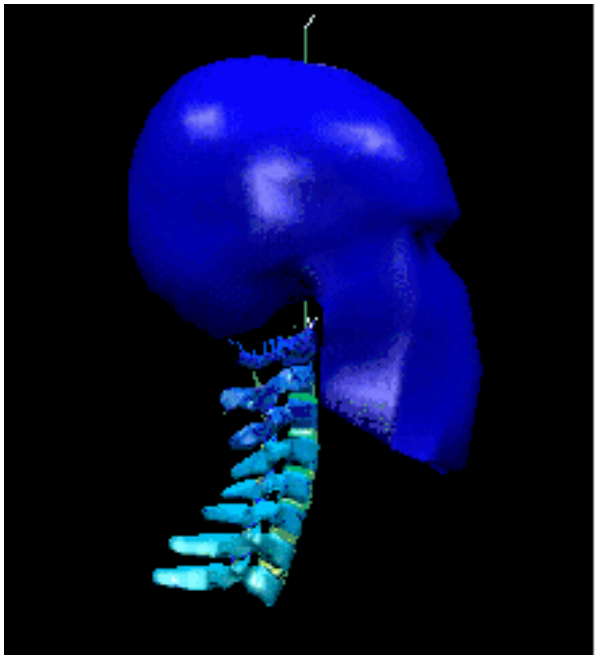
According to Ben Benjamin, Ph.D., the following resistance tests should be included when assessing whiplash:

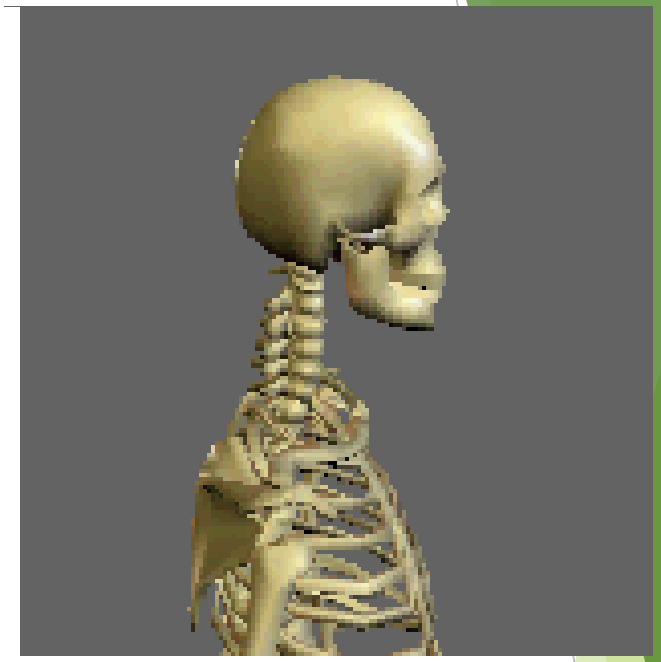
Pain upon resisted neck rotation or flexion indicates injury to the sternocleidomastoids.

Pain upon resisted side flexion of the neck indicates injury to the scalenes.

Pain upon resisted neck extension indicates injury to the posterior scalenes, suboccipitals and/or erector spinae.

What are the symptoms?

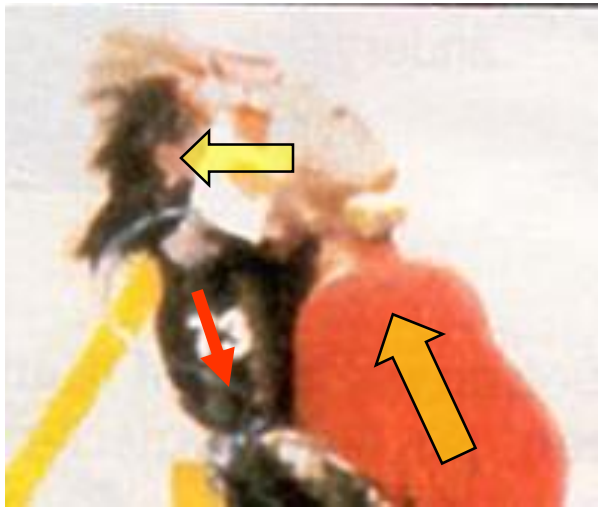




<u>Symptoms are:</u>

headaches/migraines, stiffness, neck pain, dizziness (nausea/vomiting), problems thinking or remembering, numbness and tingling (arms, face, shoulders), jaw pain, low back pain, hip pain, impaired vision

What happens to the driver? (I)



What happens during a rear end collision if

- head restraint
- seat position
- seat belt height

are not adjusted correctly?

1) Body moves up – depending on angle of backrest and position of seat belt adjustor…..

2) …..head jerks back…..

3) …..pushing the head restraint down

What are the facts?

Facts:

- even low speed accidents can cause significant injuries depending on where and how hard your car got hit, your position in the car, the position of your head, type of seat, position of the headrest, your pre-accident medical condition, and other things

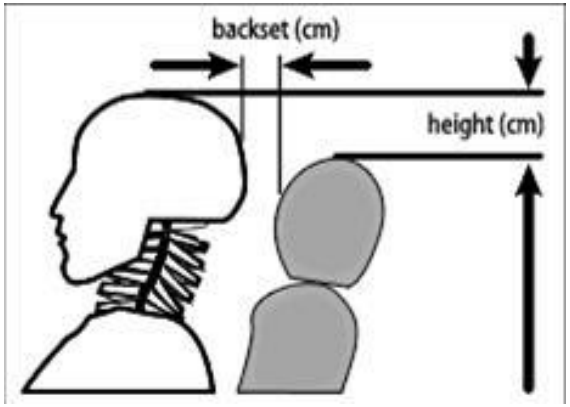
- only 12% of persons who suffer from whiplash are symptom-free after 10 years

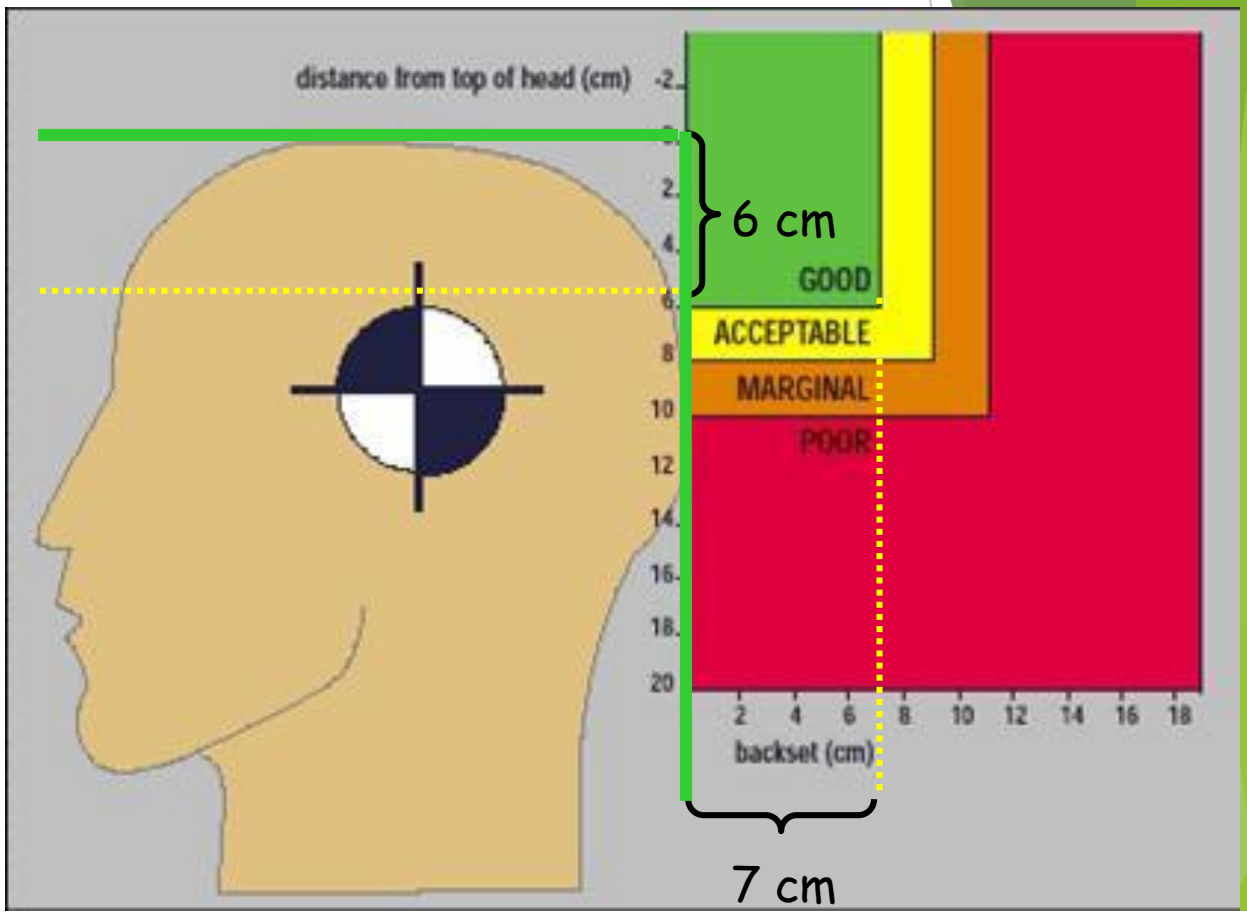
- a study by Young et al. (2005) showed that 93% of all head restraints observed were sub-optimally positioned

A L Young, B T Ragel, E Su, C N Mann, E H Frank: Assessing automobile head restraint positioning in Portland, Oregon; Injury Prevention 2005; 11: 97-101.

Adjust your head restraint

Teminology





1) Ensure that the top of the head restraint is as high as the top of your head.
2) Position the head restraint as close to the rear of your head as possible.

Sources: http://www.iihs.org/ratings/head_restraints/head_restraint_info.html
http://www.rospa.co.uk/roadsafety/info/adjust_head_restraints.pdf

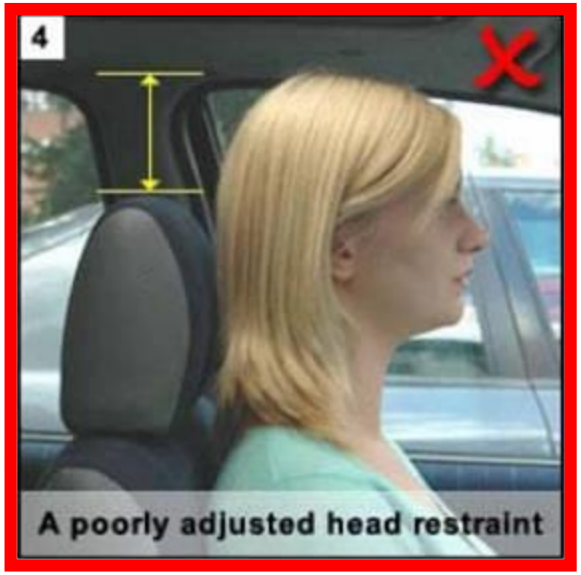
How can it be prevented?

Examples of Properly and Poorly Adjusted Head Restraints

Picture 3

This picture shows another example of a properly adjusted head restraint.

As in Picture 1, the two main points to note are that the head restraint is as high as the top of the occupant's head, and the restraint is close to the back of the head.



Picture 4

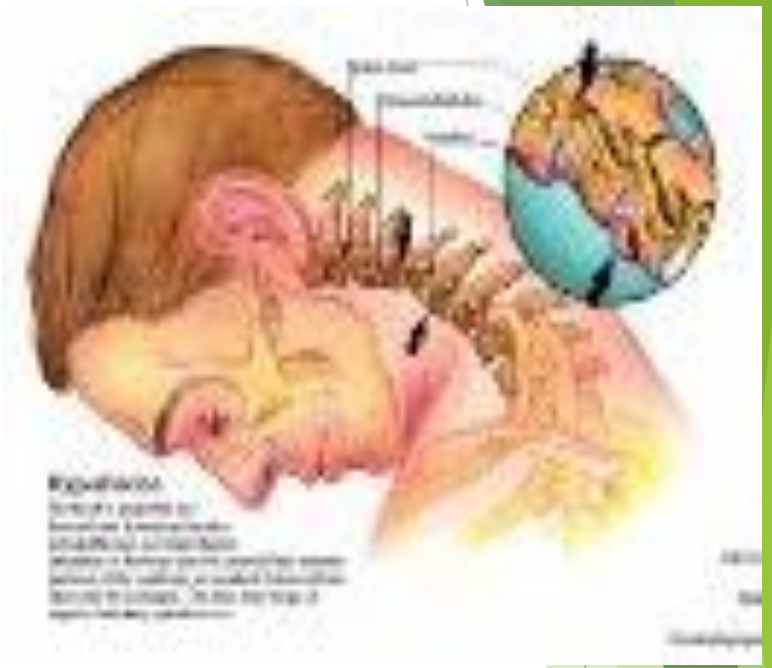
This picture is an example of a poorly adjusted head restraint.

The yellow arrow shows the distance between the top of the occupant's head and the top of the head restraint, which would increase the risk of an injury.

The head restraint should be moved higher in order to adjust it correctly, as shown in picture 3.

Source: http://www.rospa.co.uk/roadsafety/info/adjust_head_restraints.pdf

Mechanics of Whiplash



Hyperextension *HyperFlexion*

Majority of cases, no injury can be identified

Symptoms attributed to musculo-ligamental sprain

Mechanics of Whiplash

Accelerating Phase	Duration	Acceleration	Head-Neck Movement
Phase 1	0-60 msec.	0 g	Rest State
Phase 2	60-120 msec.	0.3 g	Head rise, neck flexion and backbone extension
Phase 3	120-200 msec.	4.3 g	Neck extension
Phase 4	200-300 msec.	2.8 g	Head and neck hyperextension
Phase 5	300-400 msec.	1.0 g	Head forwards with neck flexion (whiplash)
Phase 6	+ de 400 msec.	0.8 g	Little flexion, back to starting position

Order of application in acute cases

Static Compression – Applying static compression to affected trigger points creates an influx of oxygen that relaxes the contracted musculature. Since myofascial trigger points often develop in the cervical muscles following a whiplash injury, this treatment prevents prolonged muscular dysfunction that can linger for months or years after the initial trauma.

Myofascial Release – Myofascial release techniques can free restricted neck muscle and fascia to help restore fluidity, thus relieving the stiffness of whiplash. Additionally, myofascial unwinding can unlock dysfunctional fascial holding patterns established at the time of injury.

Deep Tissue Massage – Once the superficial muscles are relaxed, deep tissue work can liberate contracted deep fascia, adhesions and scar tissue. Making sure to stay within the client's pain tolerance level, deep tissue [illegible] nerves.

Because of the neck's delicacy, MMT Therapist should always proceed cautiously with a whiplash injury. The following guidelines are intended to keep therapists mindful of the neck's vulnerability:

Since the anterior neck muscles are often injured in whiplash, be careful to avoid pressing on the nearby carotid artery.

Wait until a few days after the accident before administering massage therapy so that the initial healing process is uninterrupted.

A physician should always be consulted to determine if there is a fracture, concussion or other disc problem before attempting any bodywork.

Make sure your approach is gentle enough to not cause the client any further discomfort than what they are already experiencing.

Stages of Injury

Stage I	**Acute;** Inflammatory phase; Up to 72 hours
Stage II	**Subacute;** Repair phase; 72 hours to 14 weeks
Stage III	**Remodeling phase;** 14 weeks to 12 months or more
Stage IV	**Chronic;** Permanent

Grades of Severity of Injury

Grade I	**Minimal**; No limitation of motion; No ligamentous injury; No neurological findings
Grade II	**Slight**; Limitation of motion; No ligamentous injury; No neurological findings
Grade III	**Moderate**; Limitation of motion; Some ligamenetous injury; Neurological findings may be present
Grade IV	**Moderate to Severe;** Limitation of motion; Ligamentous instability; Neurological findings present; Fracture or disc derangement
Grade V	**Severe;** Requires surgical management/stabilization

Croft Guidelines for Frequency and Duration of Care in Cervical Acceleration/Deceleration Trauma [1]

	Daily	3x/wk	2x/wk	1x/wk	1x/mo	T_D [2] Duration	T_N [2] # Visitis
Grade I	1 wk	1-2 wk	2-3 wk	<4 wk	**3 mo**	<11 wk	<21
Grade II	1 wk	<4 wk	<4 wk	<4 wk	<4 mo	<29 wk	<33
Grade III	1-2 wk	<10 wk	<10 wk	<10 wk	<6 mo	<56 wk	<76
Grade IV	2-3 wk	<16 wk	<12 wk	<20 wk	....[4]	....[4]	....[4]
Grade V	**Surgical stabilization necessary--therapeutic care is post-surgical**						

Re-written

Grade 1 – complaints of neck pain, stiffness or tenderness only but no physical signs by the examining physician.
Grade 2 – neck complaints and the examining physician finds decreased range of motion and point tenderness in the neck.
Grade 3 – decreased range of motion plus neurological signs such as decreased deep tendon reflexes, weakness, insomnia and sensory deficits.
Grade 4 – neck complaints including fracture and dislocation or spinal cord injury

Hot And Cold Whiplash

Metaphorically, it can be helpful to think of whiplash as having either "hot" or "cold" qualities. A recent whiplash (less than 3-6 weeks) will tend to show more hot qualities, while cold whiplash is typically older (although older whiplash can also be hot, or can turn hot if reinjured or worked insensitively).

Hot whiplash is distinguished by being sensitive, fragile, and reactive, as the fight-or-flight responses of the autonomic nervous system are still aroused. The head and neck are typically immobilized by muscular spasm or hyper-tonus since the postural reflexes recruit muscular tension to provide the inherent structural stability that has been compromised by the injury. Because of tissue damage, inflammation will be a factor in a recent or unresolved whiplash. The tissue in injured areas will feel softer or puffy to your gentle palpation (though not always literally hot). Your client may respond to direct touch with guarding, uneasiness, or pain, which further increases sympathetic activation.

In contrast, cold whiplash is typically older, less autonomically reactive, and restricted at the ligamentous or joint level (as opposed to muscularly spasmed). It is characterized by stubborn, dense, hardened tissue deep around the joints. Hot whiplash often becomes cold (restricted) once initial tissue damage has begun to heal; cold whiplash can become hot (reactivated) if worked too quickly or aggressively.

Working With Hot Whiplash

When working with hot whiplash, our primary goal is to calm our client's autonomic activation before trying to work with any tissue restrictions. To get a sense of this, imagine that you're working on an unprotected central nervous system. In a way, you are--after a traumatic event, our ability to filter out or tolerate intense experience decreases, leaving us feeling bare and unshielded. How would you touch a client who was nothing but a bare brain and spinal cord? Hopefully, very delicately and carefully

Pace your work: because sympathetic reactivation can happen by working either too long, too fast, or too deeply, instead try shorter sessions with small, supportive, calming interventions. Watch to see how your client responds to your work, both within your session and between sessions. Gradually increase duration, scope, or depth as your client is ready. You can always work a little more next time, but it is hard to take back your work, once you've already done too much.

Generic Care Program for Whiplash patient

Healing Phase

Initial Assessment
2-3x/week for 2 weeks for 30 min
1x/week for 2 weeks for 30-45 min
1x/week for 4 weeks for 30-45 min

Transition to wellness

2x/mo 60 min
1x/mo 60 min

DELTOID Position of Patient: With the patient sitting the elbow should be flexed to indicate the neutral position of rotation.

Sample Instructions to Patient: “I am going to push down and I want you to resist me. Keep your arm up as I push down.”

Position of Therapist: The therapist should stand at test side of patient and support abducted arm under the elbow and wrist if necessary.

Test: Patient attempts to bend the elbow with the hand supinated.

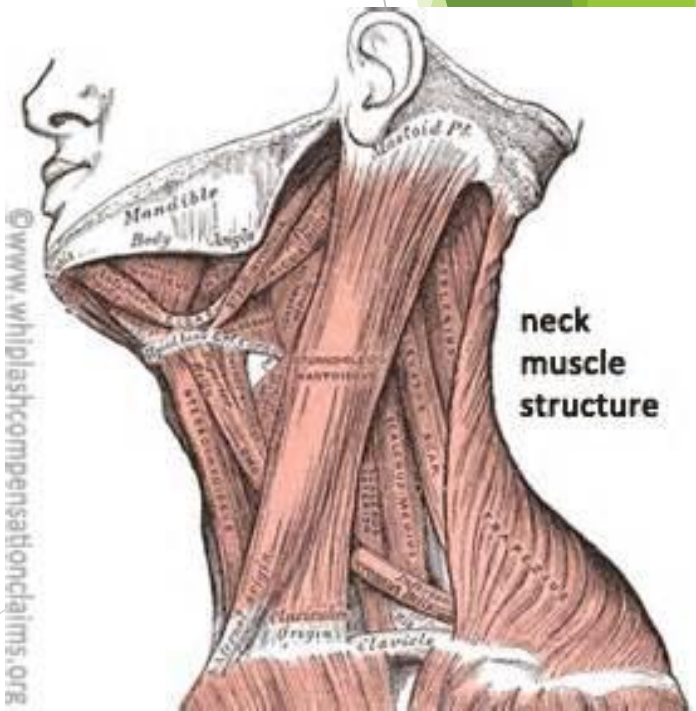
Sample Instructions to Patient: “Bend your elbow…”

Test: Support the patients forearm under the wrist while the other hand used for resistance is placed over the dorsal surface of the metacarpals. Do not permit full extension of the fingers.

Sample Instructions to Patient: "Bring your wrist up, hold it. Don't let me push it down."

Lateral Whiplash

The deepest soft-tissue structures of the neck, such as the zygapophyseal (or facet) joint capsules and ligaments, can be primary sources of pain and movement restriction long after a whiplash injury has occurred. Once the inflammation of the original injury has settled, restoring mobility to these deep structures can provide significant relief



Cervical Compression Test

Testing for: Compression of the cervical nerve root or facet joint irritation of the cervical spine.

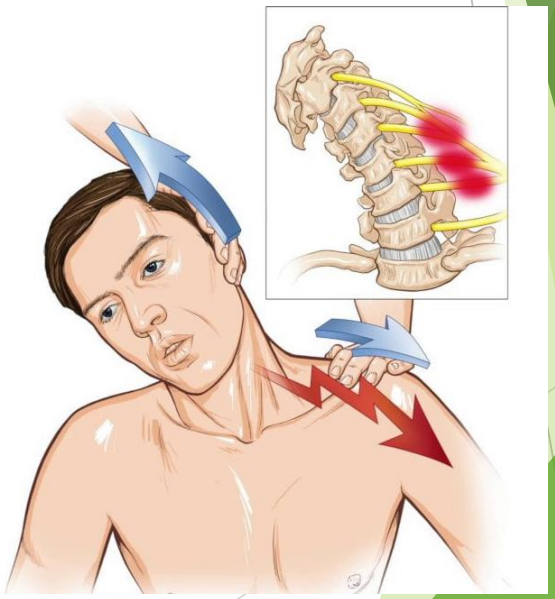
Client presents with tingling going down unilateral or bilateral arms.

Is it a disc, facet, or peripheral entrapment due to fascia or muscle?

Jacksons test

Shoulder Depression Test

Positive:
Pain on the side of the compression indicates irritation or compression nerve root or foraminal irritation.
Pain on the side of the stretch indicates hypomobile joint capsule or a nerve sleeve irritation or muscle splinting.



Cervical Distraction:

Used after Cervical compression to relieve pressure on cervical nerve roots.

If Cerv compression caused pain and distraction relieved then client most likely has a disc/facet issue causing neural impingement.

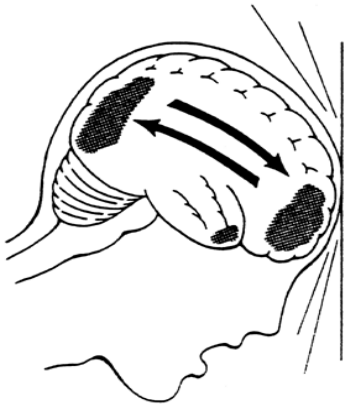
If Cerv compression caused NO pain and distraction caused pain then client most likely has a spastic cervical muscle or peripheral entrapment. MM stripping and stretching needs to be done.

Lateral translation refers to side-to-side movement of one vertebra in relation to another. In order to check for deep soft-tissue restrictions, we'll feel for the freedom of this important movement at each vertebra, since the other movements of the neck--flexion/extension, rotation, and lateral bending--will be affected by the same connective tissues that restrict translation. Any of several deep structures can be involved: the facet joint capsules, the ligamentum flavum, as well as the small intertransverse ligaments and muscles .

Persons suffering from LT after an incident are highly Suspect of ligament damage.

Whiplash Brain injuries

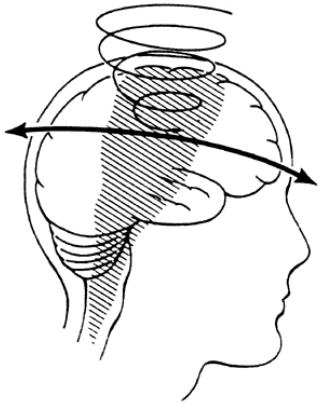
Contre-Coup



Concussion

Intracranial Haematoma – Epidural, Intracerebral, Subdural

Diffuse axonal injury



How are Brain Injuries Assessed?

PAA

Post Accident Amnesia – memory problems when regaining consciousness

- Minor Brain Injury
  Unconscious for < 15 mins

- Moderate Brain Injury
  Unconscious > 15 mins but < 6 hrs + PTA < 24 hrs

- Severe Brain Injury
  Unconscious > 6 hrs OR PTA > 24 hrs

- Very Severe Brain Injury
  Unconscious > 48 hrs OR PTA > 7 days

Pathophysiology – a Sprain

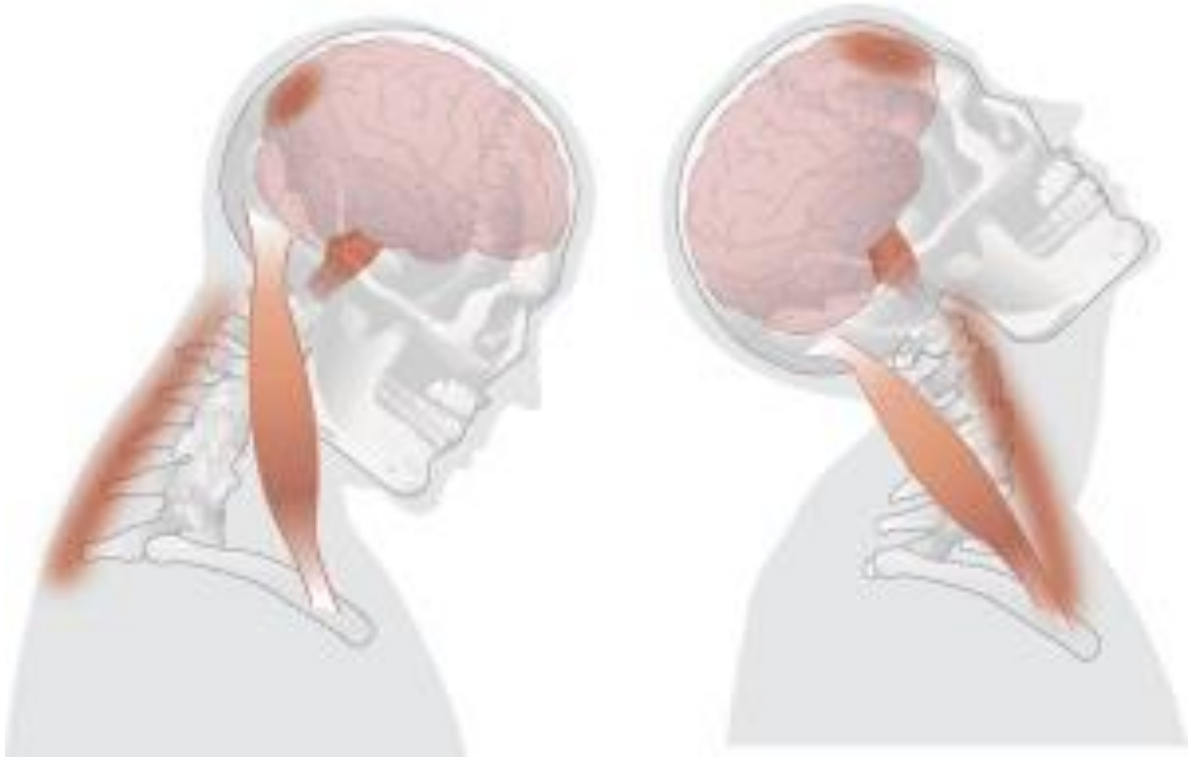
Majority of whiplash injuries arise in soft tissue injury to neck involving ligaments, joints, joint capsules, muscles and tendons

Type 1: Injury at microscopic level without altering structure

Type 2: Partial tear at macroscopic level no separation

Type 3: Severe stretching and tearing with separation of tissues

Whiplash Associated Disorder



Whiplash Associated Disorders (WAD)

Classed by severity of signs and symptoms

WAD 0	**No complaints or physical signs**
WAD 1	Neck complaints but no physical signs
WAD 2	Neck complaints and musculoskeletal signs
WAD 3	Neck complaints and neurological signs
WAD 4	**Neck complaints and fracture / dislocation**

Most whiplash injury results from low impact collisions

Prolonged and Escalated Symptoms

Excess stress
Psychosocial difficulties
Anxiety (approx 40%)
Depression (approx 40%)
PTSD
Poor sleep
Ear pain
Poor posture
Dizziness
Memory problems
Concentration problems
Headaches
Movement difficulty

10% have WAD symptoms for > 2 years after accident:

Caused by. . .

Poor sleep

Depression, Anxiety, Stress

Psychosocial difficulties

Pre-existing conditions

Inappropriate therapeutics

Prolongation of litigation

Treatments – Quebec Task Force (1995)

Most studies show little or no efficacy of treatments

Collar and NSAIDs on short term basis

Avoid long term physiotherapy

Mobilization by trained person & active exercise for grade 2 & 3

Drugs for insomnia or anxiety

Early return to activities and promote mobility

An x-ray of the neck (side view) showing cervical spondylosis

Prognostic Factors in Patients

WAD patients 2 times sensitive to cold in neck

Overall elevated level of distress > in the WAD gp than controls

Neither vibration or heat caused different responses

Pain in response to non-noxious stimulation over presumably healthy tissues suggests that central mechanisms are responsible for ongoing pain in at least some whiplash patients

Moog et.al 2002

WAD patients have lower pain thresholds for electrical stimulus

Hypersensitivity to peripheral stimulation in WAD patients

Curatolo et.al 2001

Hassles and Daily Problems in Patients

"Everyday Problem Checklist" (EPCL) scores were higher in WAD patients than healthy controls

Chronic WAD patients report a high stress load

WAD patients (especially those with a low educational level) appear to be more vulnerable and react with more distress than healthy people to all kinds of stressors

Stress responses probably play an important role in the maintenance or deterioration of whiplash-associated complaints

Blokhorst et.al 2002

Anxiety and Depression in Patients

Depression & Anxiety 2 years before accident, significantly overlaps with WAD patients

Wenzel et.al 2002

Depression & Anxiety greater in WAD patients than controls

Those with longest history of pain gave highest ratings of pain

Those with longest history of pain were most depressed

Most of these patients were involved in litigation.

Whiplash injury sufferers are anxious and depressed

Their psychological distress could be aggravated by litigation

Lee et.al 1993

End of Whiplash
Mod 2 MMT Course