



RU RMT 20 • PATHOLOGICAL TREATMENTS • LECTURE 02

Whiplash

Lecture 02 — Cervical Acceleration–Deceleration (CAD) injury: pathology, assessment & massage treatment

How this lecture fits together

Whiplash is one of the most common conditions an RMT will treat and one of the most misunderstood. We move from what whiplash is, through how it injures the neck, to safe assessment and a practical massage protocol.



01 · Understanding

What whiplash is, its causes, prognosis and the Quebec Task Force grading of severity.



02 · Pathophysiology

The structures injured, the range of signs and symptoms, and how diagnosis is made.



03 · Assessment

Taking a safe history, screening, palpation, treatment goals and frequency of care.



04 · Treatment

Stage-based hydrotherapy and the hands-on protocol, positioning, and contraindications.

What you will be able to do

By the end of this lecture you will be able to recognise whiplash, judge when massage is safe, and plan and deliver an effective treatment.



Define whiplash

Describe the acceleration–deceleration mechanism and the Quebec Task Force WAD grades.



Map the injury

Identify the neck, shoulder and trunk structures a whiplash can affect.



Recognise the signs

List common symptoms and the timeline in which they appear.



Assess safely

Take a history, apply screening rules and know when to refer on.



Plan treatment

Select stage-appropriate techniques, hydrotherapy and session frequency.



Work within limits

Apply the contraindications and cautions specific to the injured neck.

What is whiplash?

“Whiplash” is a lay term for the multiple injuries that follow a sudden acceleration and/or deceleration of the head and neck. It is not a single diagnosis but a description of damage across many neck tissues.



Mechanism

A sudden front-to-back, back-to-front or side-to-side movement of the head on the neck.



Most common cause

A motor-vehicle collision; also sport, a blow to the head, a fall, or violent shaking.



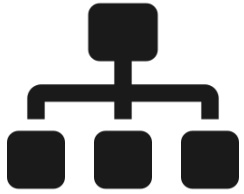
Onset

Symptoms typically appear 24–48 hours after the triggering incident.



Duration

Most cases settle in about six weeks, though some symptoms can linger.



01

SECTION ONE

Understanding Whiplash

Before treating, an RMT must understand what whiplash is, what causes it, how it tends to resolve, and how its severity is classified.

How whiplash happens

The head is heavy and the neck is mobile, so any sudden change in velocity whips the head beyond its normal range. Motor-vehicle collisions are the classic cause, but they are far from the only one.



Vehicle collisions

Rear-end, head-on and side-impact crashes — the most frequent cause of whiplash.



Sport & falls

Contact-sport impacts, a blow to the head, or a fall that snaps the head forward or back.



Violent shaking

A forceful shaking of the body — including shaking that can injure a child's neck.

Acceleration, then deceleration

In a typical rear-end collision the trunk is pushed forward while the head lags, forcing the neck into extension; the head then rebounds into flexion. This rapid S-shaped whip strains muscles, tendons and ligaments and can disturb the cervical joints and nerves. Because the tissues are stretched at speed, the damage is often greater than the visible signs suggest.

“Whiplash” describes multiple injuries to numerous neck tissues — not one structure, and not one diagnosis.

Why the term causes confusion

Although “whiplash” is not a clinically precise term, it persists because so many structures can be involved. The great majority of injuries are superficial — yet pain can outlast the original tissue damage when compensatory trigger points develop in the neck, shoulder and back, sometimes lingering for months or years.

95%

of whiplash injuries involve superficial damage to muscle and tendon only.

Rarely

life-threatening — the short-term prognosis is usually good.

Months

that compensatory trigger points and pain can persist after the injury.

Source: Rattray, F. & Ludwig, L. (2000). Clinical Massage Therapy, ch. on Whiplash.

Recovery and the longer view

Most people recover within several weeks, but a meaningful minority develop persistent symptoms, and a prior injury raises the stakes for any future one. Reliable long-term statistics are scarce.

40%

may still have symptoms at 3 months after the incident.

18%

may still be affected 2 years later.

2×

a previous whiplash can double the risk of severe symptoms from a second.

The Quebec Task Force on WAD

To bring order to a confusing picture, the Quebec Task Force defined Whiplash-Associated Disorders (WAD) and graded them from 0 to IV by clinical signs. Rattray and Ludwig build their assessment and treatment decisions around this grading, because the grade tells you how cautious to be and whether massage is appropriate at all.



A grading tool

An objective scale to describe severity and guide treatment and research decisions.



Driven by signs

Grades rise with the presence of musculoskeletal then neurological then bony findings.



Guides safety

Higher grades signal fracture, dislocation or nerve injury — medical territory, not massage.

Source: Spitzer, W.O. et al. (1995), *Quebec Task Force on Whiplash-Associated Disorders*, *Spine* 20(8S). Framework applied as in Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.

Grades 0 through IV

Grade 0 No neck complaint, no physical sign.

Grade I Neck pain, stiffness or tenderness only — no physical signs.

Grade II Neck complaint plus musculoskeletal signs: reduced range of motion and point tenderness.

Grade III Neck complaint plus neurological signs: reduced or absent reflexes, weakness, sensory deficit.

Grade IV Neck complaint plus fracture or dislocation — a medical emergency.

Source: Spitzer, W.O. et al. (1995), Quebec Task Force on Whiplash-Associated Disorders, Spine 20(8S).

Matching care to severity



Grades 0–II — massage indicated

- Soft-tissue injury only; massage is generally appropriate once acute symptoms settle.
- Focus on pain, oedema, hypertonicity and trigger points as the tissue heals.
- Grade II carries the highest risk of lingering symptoms — reassess often.



Grades III–IV — refer first

- Neurological signs, fracture or dislocation are present — do not begin massage.
- Refer to a physician; massage only later, within any limits the physician sets.
- Screen for these signs at every visit, not just the first.

Source: Spitzer, W.O. et al. (1995), Quebec Task Force on Whiplash-Associated Disorders, *Spine* 20(8S). Treatment reasoning per Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.



02

SECTION TWO

Pathophysiology & Presentation

The neck packs vessels, nerves, muscles and joints into a small, mobile space. Understanding what is injured explains the wide range of symptoms.

The vulnerable neck

The neck is one of the most vulnerable regions of the body. It is densely packed with arteries, veins, lymphatic vessels, muscles, tendons and ligaments — most of which work together to keep the brain perfused, the body moving and the immune system responsive. When the neck is injured, structures well beyond it can be drawn in.



Vessels & lymph

Carotid and vertebral arteries, veins and lymphatic vessels run through a small space.



Muscles & joints

Layered muscles, tendons and ligaments stabilise and move the cervical spine.



Nerves

Cervical and thoracic nerve roots, plus the vagus and phrenic nerves, pass nearby.

Beyond the neck itself

Because the neck anchors breathing and posture, a whiplash can disturb muscles of respiration, the jaw and the whole back — which is why clients often report symptoms far from the point of impact.



Diaphragm

The primary muscle of breathing can be affected, altering respiration and rib mechanics.



Intercostals

The muscles between the ribs, recruited in guarded, shallow breathing.



Erector system

The entire spinal erector group compensates for a guarded, painful neck.



Jaw & chewing

Chewing and jaw muscles are frequently involved, contributing to headache.

The cervical girdle



Scalenes

Side-neck muscles that can entrap the brachial plexus when hypertonic.



Recti & capitis

All the rectus and capitis muscles that fine-tune head position.



Trapezius

The large posterior muscle that braces the shoulder girdle and neck.



Levator scapulae

A common site of guarding, pain and trigger points after whiplash.

Deeper still, the cervical and thoracic vertebrae — with their surrounding muscles, tendons, ligaments, fascia and blood vessels — and the cervical and thoracic nerve roots, vagus and phrenic nerves, may all be involved.

From transient to serious

Conditions resulting from injury to these delicate structures range from temporary vertigo to, rarely, permanent paralysis. Most soft-tissue injuries — to muscle, tendon and ligament — are transient. Yet the lingering chronic pain and emotional stress reflect the very real fear that surrounds injury to this area, and that fear is part of what an RMT helps to ease.



Usually transient

- Most soft-tissue whiplash settles as the tissue heals.
- Stiffness, guarding and trigger points respond well to massage.
- Reassurance and gentle movement support recovery.



Sometimes lasting

- Chronic pain can persist when compensation patterns set in.
- Emotional stress and fear can amplify and prolong symptoms.
- A listening, unhurried approach is part of the treatment.

How whiplash is confirmed

Diagnosis is a physician's role. The RMT's job is to know what has been ruled out before hands-on work begins, and to refer when it has not.



Physician exam

The doctor inspects the head and neck for visible signs of trauma.



X-ray

Imaging is used to rule out cervical spine fracture.



CT scan

Ordered when extensive soft-tissue injury is suspected.

What clients report

Pain usually begins within 24–48 hours, but symptoms can surface days, weeks or even months later. As a rule of thumb, the sooner symptoms appear after the incident, the more serious the injury.



Neck

Ache and tenderness, with neck and shoulder muscle spasm.



Shoulder & back

Shoulder pain and referred low-back pain from compensation.



Head & ears

Headache and tinnitus — a ringing in the ears.

Movement and nerve signs



Limited ROM

A reduced, guarded range of motion through the neck.



Swelling

Localised neck swelling in the days after injury.



Paraesthesia

Pins-and-needles in the arm or hand if neurological structures are involved.

Remember: arm or hand paraesthesia points to neurological involvement (WAD III). Treat this as a red flag and refer for medical assessment before massage.

When to stop and refer

Some findings move a client out of massage scope entirely. If any of these are present or suspected, do not treat — refer to a physician or emergency care.



Possible fracture or dislocation

Severe pain, deformity, or a high-energy mechanism — WAD IV until cleared.



Head injury or concussion

Loss of consciousness, confusion, worsening headache, vomiting or visual change.



Neurological signs

Numbness, weakness, or pins-and-needles down the arm or hand.



Dizziness or vertigo

Especially with neck movement — screen the vertebral artery before any stretch.

Source: Screening priorities consistent with Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.



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SECTION THREE

Assessment & Treatment Planning

A careful history and physical screen decide whether — and how — to treat. From there, clear goals and a sensible schedule shape the plan.

Take a detailed history first

Before treating a client with whiplash, take a thorough history. The answers determine whether treatment is safe and what it should target.



The incident

- When did the accident occur?
- What pain have you experienced since, and where is it?
- When did the pain begin?



Current status

- Any dizziness or vertigo?
- Any spasms — and where?
- Any numbness or tingling down the arm?

Source: History framework per Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.

Deciding whether to proceed

A few more questions

- Did you hit your head?
- Have you seen a physician or gone to the ER?
- Are you taking painkillers or muscle relaxants now?

Proceed only if all three are true

- The acute pain and spasms have quieted.
- The incident occurred at least 3 days ago.
- The client is taking neither narcotics nor muscle relaxants.

Why wait? Narcotics and relaxants mask pain and protective spasm, removing the feedback that keeps treatment safe; the 3-day window lets the most acute inflammation settle.

Source: Screening rule per Rattray, F. & Ludwig, L. (2000). Clinical Massage Therapy, ch. on Whiplash.

Palpate, then test movement

Once the history clears the client for treatment, assess the tissues directly. Work gently — the goal is information, not provocation.



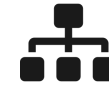
Palpate

Palpate the neck and shoulder structures for hypertonicity and trigger points.



Test ROM

Perform gentle, active neck range of motion to the onset of pain only.



Spinous processes

If qualified, palpate each spinous process from cervical to lumbar for tenderness, rotation and surrounding hypertonicity.

Source: Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.

Where treatment helps

Massage will not undo a fracture or a nerve injury — but for the soft-tissue picture that makes up most whiplash, it is genuinely effective.



Scar tissue

Scar from sprained or strained muscle can be addressed with massage techniques.



Stiffness

Generalised stiffness of the neck and compensating structures eases with treatment.



Stress

The stress that accompanies any accident or injury responds to soothing techniques.



Constricted fascia

Fascial stretches can soften and free restricted fascia.

Reasonable aims for the RMT



Reduce hypertonicity & trigger points

In the neck and surrounding tissue, restoring length and comfort.



Improve neck ROM

Recover pain-free range as guarding settles.



Relieve secondary back pain

Address the compensation patterns that spread pain beyond the neck.



Relieve stress

Calm the nervous system and ease accident-related tension.



Offer a listening ear

Be alert to secondary-gain issues and the emotional side of injury.



Support recovery

Encourage gentle activity and pain-free movement between visits.

Source: Goals per Rattray, F. & Ludwig, L. (2000). Clinical Massage Therapy, ch. on Whiplash.

Rest less, move sooner

The first medical step is to rule out life-threatening or paralytic damage. Once the client is stabilised, conservative care begins — and current thinking has shifted away from long immobilisation.

Old approach

- Fit a neck brace and immobilise the injured neck.
- Prolonged rest as the main route to recovery.
- Risk: immobilising already-injured tissue can prolong rehabilitation.

Current approach

- Early, gentle neck movement with limited activity and rest.
- If a brace is prescribed, wear it intermittently and briefly.
- Prolonged rest, though initially soothing, is not the key to recovery.

Between sessions



Self-care

Ice to reduce inflammation; ROM exercises starting ~72 hours after injury; avoid heavy neck strain for 1–2 weeks.



Return precautions

Revisit the physician or ER for dizziness, fatigue, irritability, or ongoing shoulder or arm pain.



Prevention

Wear a seat belt, use proper headgear in high-impact sport, and never shake a child.

Common medications: over-the-counter NSAIDs such as ibuprofen (Motrin, Advil) and naproxen (Aleve, Naprosyn) for pain and inflammation. Note current medications in your history — they affect treatment timing.

Rattray & Ludwig: treat the stage of healing

Rattray and Ludwig organise whiplash treatment around the stage of tissue healing rather than the calendar. Technique selection, hydrotherapy and treatment frequency all change as the injury moves from acute inflammation toward chronic remodelling — matching the work to what the tissue can tolerate.



Acute / early subacute

Calm inflammation and pain: lymphatic drainage, cold hydrotherapy, pain-free movement.



Late subacute

Address specific muscles and trigger points; contrast hydrotherapy to flush the tissues.



Chronic

Remodel scar and restore full function; deeper work as tolerance returns.

Source: Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.

Settle the inflammation

In the earliest stage the priorities are reducing pain and oedema and calming a revved-up nervous system, without provoking the injured tissue.



Cold hydrotherapy

Cold applications reduce inflammation and pain; taught as self-care between visits.



Lymphatic drainage

Gentle drainage helps move oedema and reduces pressure on irritated tissue.



Pain-free movement

Diaphragmatic breathing and active free neck ROM to the onset of pain only.

Source: Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.

Specific work, then remodelling

As inflammation settles, treatment becomes more specific. Contrast hydrotherapy promotes a flushing of the tissues; if inflammation flares from daily activity or deeper work, return to cold. The focus narrows to the muscles that drive ongoing symptoms.



Trigger points

Ischemic compression to release trigger points that shorten muscle and limit ROM.



Key muscles

Sternocleidomastoid, scalenes and posterior neck and shoulder-girdle muscles.



Don't overlook the throat

Supra- and infrahyoid muscles are often injured in whiplash — and often missed.

Source: Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.

How often, and for how long

Treat more often early, then taper as the client improves. Begin no sooner than three days after the incident.



Early phase

60-minute sessions twice a week until pain and hypertonicity resolve. Shorter, more frequent visits suit the inflammatory early subacute stage.



Recovery phase

60-minute sessions once a week for about a month as symptoms settle.



Maintenance

60-minute maintenance sessions once a month to hold the gains.

Source: Frequency per the lecture protocol; tapering consistent with Rattray, F. & Ludwig, L. (2000). *Clinical Massage Therapy*, ch. on Whiplash.



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SECTION FOUR

Massage Treatment & Protocol

Effective whiplash treatment uses simple techniques applied without aggression. Positioning, comfort and clear limits matter as much as the strokes themselves.

Simple techniques, applied with care

None of this should scare you away from treating whiplash. You can give highly effective treatment with the simplest techniques and relieve much of the pain most clients feel. The protocol below treats a common picture: cervical strain after a front-to-back collision, five days post-accident.



Myofascial

Myofascial techniques to soften and free restricted fascia.



Effleurage

Probing effleurage to assess and warm the tissue as you work.



Petrissage & kneading

Petrissage and gentle kneading — performed without aggression — for good tissue response.

Positioning, support & hot packs

Comfort and support come first. A workable position is the client seated on the side of the table, feet planted on a footstool, with a pillow supporting each elbow.



Hot packs

Hot packs comfort and soften tissue — but keep them away from the carotid arteries.



Support the head

If the client cannot hold her head in place, support it with your free hand.



Firm, not aggressive

Work firmly but never so hard that she must push against you to stay aligned.

Source: *Positioning guidance from the lecture protocol*

Hard limits on treatment

These are non-negotiable. When in doubt, do less and refer.



Leave the brace to the client

Never remove a prescribed cervical collar yourself; if cleared to do so, the client removes and replaces it.



Never cause pain

No technique should ever produce pain or discomfort — pain is your signal to ease off.



Refer if serious injury is possible

Any chance of fracture, concussion, displaced disc or serious injury — do not massage; refer to a physician.



Protect the vessels

Stay off the carotid arteries; screen the vertebral artery before stretching in subacute and chronic stages.

Source: *Cautions from the lecture protocol; vessel screening per Rattray, F. & Ludwig, L. (2000). Clinical Massage Therapy, ch. on Whiplash.*

Carry these into the clinic



Whiplash is many injuries

An acceleration–deceleration event injures numerous neck tissues, not one structure.



Grade guides safety

WAD 0–II is usually massage territory; III–IV means refer first.



Screen before you treat

History and physical screen decide whether — and how — to proceed.



Treat the stage

Match technique, hydrotherapy and frequency to the stage of healing.



Simple, firm, kind

Effective treatment is gentle, well-positioned and never painful.



Know your limits

Respect the contraindications; refer when anything serious is possible.

Sources for this lecture

Rattray, F. & Ludwig, L. (2000). Clinical Massage Therapy: Understanding, Assessing and Treating Over 70 Conditions. Toronto: Talus Inc. — chapters on the inflammatory process, soft-tissue injury and whiplash; assessment, hydrotherapy, treatment goals and frequency.

Spitzer, W.O., Skovron, M.L., Salmi, L.R., et al. (1995). Scientific Monograph of the Quebec Task Force on Whiplash-Associated Disorders: redefining “whiplash” and its management. Spine, 20(8 Suppl), 1S–73S. — the WAD 0–IV classification.

College of Massage Therapists of Ontario (CMTO). Standards of Practice — assessment, consent, record-keeping and scope considerations applied throughout.

RU-RMT 20 — Lecture 02 (Whiplash). Course lecture notes: general information, signs and symptoms, treatment options, and the hands-on protocol.



UP NEXT — PRACTICAL

Treating the Whiplash Client

Positioning and draping a seated client · hot-pack safety · myofascial release of the cervical girdle · trigger-point work on SCM, scalenes and levator scapulae · pain-free ROM. Hydrate, and we'll meet at the tables.