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OF HEALTH BUSINESS AND TECHNOLOGY

Lecture 08 — Scar Tissue

Student Handout · RU RMT 20 Pathological Treatments · Ruhani College · Registered Massage Therapy Diploma Program

How to use this handout: it follows the lecture in the order it is delivered, so you can annotate it as we go rather than copying slides. Everything examinable in this lecture is here. Work through the review questions at the end without looking back, then check them against the answers.

Learning outcomes

By the end of this lecture you will be able to read a scar's stage, judge when it is ready for work, and remodel it with focused, respectful technique.

Explain healing — Describe the wound-healing cascade and the remodeling phase massage can affect.

Stage & assess — Distinguish acute, subacute and chronic scarring, and assess by sight and touch.

Remodel the scar — Use friction, fascial work and joint mobilisation to remodel mature scar tissue.

Work with care — Hold a positive, trauma-aware attitude and stay within the pain-free boundary.

Definition — What is a scar?

A scar is irregular fibrous tissue that replaces normal tissue following injury or incision. It is the body's repair patch — effective at closing a wound, but never identical to what it replaces.

Fibrous replacement — Irregular collagen replaces the orderly tissue lost to injury or incision.

Many causes — Lacerative trauma, burns, surgery and breaches in the dermis.

Onset & course — Forms within hours of injury, and continues forming over weeks to months.

Source: Scar tissue covered in Rattray & Ludwig (2000), Clinical Massage Therapy (scar tissue & wounds chapters).

Understanding Scar Tissue

A scar is the visible record of a fast, untidy repair. Understanding how it forms — and when it is still remodeling — is what makes massage useful.

General Information — Where scars come from

A living process: a scar is not a finished object but a tissue that keeps remodeling for months — which is exactly why massage can change its course.

Causes — Lacerative trauma, burns, surgery, and other breaches in the dermis.

Anywhere — A scar can form anywhere on the body the skin is broken.

Onset & who — Onset within hours of injury, with ongoing formation; more prevalent in younger people.

Pathophysiology — The body's emergency repair

Picture a finger cut by a knife. Bleeding starts at once from the lacerated capillaries, and the body responds fast: chemicals rush in to seal the capillary ends and stop the bleeding, tissue regrowth begins to close the breach, and macrophages flood the site to fight infection. The repair is efficient and swift — but not tidy.

Seal the bleeding — Chemicals cauterise the lacerated capillary ends to stop blood loss.

Rebuild the barrier — Tissue regrowth begins immediately to close the skin rupture.

Fight infection — Macrophages flood the breached site to combat infectious organisms.

The Wound-Healing Cascade — Seven overlapping steps

From insult to mature scar, healing moves through a cascading, overlapping sequence — a chemical domino effect that closes the wound and avoids infection.

Inflammation & vascularisation

Wound contraction

Epithelium rebuilding



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New vascularisation
Tissue granulation
Matrix & collagen remodeling
Fibroplasia & matrix formation

The Remodeling Phase — The massage therapist's window

The whole process can run from a few weeks to as long as two years. Of all its stages, matrix and collagen remodeling matters most to us — because it is the one massage can directly influence.

Weeks to two years — Healing is slow; the remodeling phase stays open for months.

The workable phase — Collagen remodeling is the stage massage techniques can directly affect.

Inflammation is needed — Localised inflammation and macrophages are essential to healthy, pliable scar — remember this for the protocol.

Source: Stages of healing & remodeling per Rattray & Ludwig (2000), Clinical Massage Therapy.

The Mature Scar — Different, and weaker

All scars fade in size and colour over time, but the finished tissue is never the equal of the original skin. The orderly collagen and fascia are replaced by an irregular web.

~80% — as strong as the pre-injury skin — an irregular collagen web.

Lost — sensation, sweat pores and hair follicles in the scarred area.

Fades — in size and colour over time, but never fully disappears.

What Shapes Healing — Factors that affect scarring

Two people, the same wound, very different scars. A range of individual factors influences how well and how quickly a wound heals.

Physiological — Metabolism, insulin delivery and immune-system efficiency.

Nutrition & activity — Activity level and vitamin and mineral intake.

Individual — Ethnic background and age all shape the final scar.

Related Compromised Tissue · 1 of 2 — Adhesions

Beyond a simple surface scar, several related forms of compromised tissue concern the RMT. The first two are adhesions.

- Follows surgery or radiation.
- Plates, strands or localised scar tissue.
- Forms secondary to ongoing chronic inflammatory conditions.
- Affects the joints.

Adhesion — — Plates, strands or localised scar tissue.

Fibrotic adhesion — — Typically forms in the chest, abdomen or pelvis.

Related Compromised Tissue · 2 of 2 — Overgrowth & contracture

Hypertrophic scar — Overgrowth that stays within the original wound boundary but extends deep into the dermis; often with second- and third-degree burns.

Keloid scar — Overgrowth beyond the original injury's boundary — ropy and gnarled in appearance; more common in people with darker skin.

Contracture — Shortened connective tissue, usually around a joint, formed after prolonged immobility — limits movement.

Source: Scar classifications per Rattray & Ludwig (2000), Clinical Massage Therapy.

Presentation & Assessment

A scar tells its stage by sight and touch. Reading whether it is acute, subacute or chronic decides whether you treat it now — or leave it well alone.



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Staging A Scar — Acute, subacute & chronic

Wounds and scars are classified into three characteristic stages. Depending on severity, the process can last from weeks to as long as two years — and the stage decides your approach.

Acute — Earliest — red, raised, hypersensitive and weeping. Hands off the scar itself.

Subacute — Healing under way — paler and flattening. Gentle work can begin.

Chronic — Healing complete — mature, settled tissue. The stage for focused scar work.

Source: Wound / scar staging per Rattray & Ludwig (2000), Clinical Massage Therapy.

Stage 1 · Acute Scarring — The earliest stage

In the acute stage the wound is fresh and reactive. The scar itself is a local contraindication — this is not the time for scar work.

Red & raised

Hypersensitive

Weeping

The forming scar is red and raised above the surrounding skin.

The area is hypersensitive to touch.

Continuous weeping of serous fluid from the healing wound.

Stage 2 · Subacute Scarring — Wound healing begun

As healing progresses, the angry signs settle and the scar begins to flatten. Gentle, careful work can start once the tissue tolerates pain-free contact.

Pink or pale — The redness fades to a pink or pale appearance.

Flattening — Flat or only slightly puckered, as the wound knits together.

Possible numbness — Sensation may be reduced or lost over the scar.

Stage 3 · Chronic Scarring — Wound healing complete

The mature scar is settled tissue — usually painless, but often tight. This is the stage for focused remodeling, especially where a scar crosses a joint.

Settled appearance — Slightly raised, puckered or sunken; a white line in lighter skin, a dark line in darker skin.

Taut & cool — Taut, often insensitive surrounding tissue, cooler than nearby skin.

Stiffness near joints — Usually not painful, but may pull or stiffen if it lies on or near a joint.

What Massage Can Address — Where treatment helps

Because the remodeling phase lasts months, there is a long window in which skilled work can improve both how a scar looks and how it functions.

Loosen fibrous tissue — Free restrictive fibrous tissue that binds the scar to what lies beneath.

Increase circulation — Improve localised circulation to support and facilitate healing.

Restore tensile quality — Help restore the soft, resilient, responsive nature of normal skin — appearance and integrity both improve.

Source: Treatment effects consistent with Rattray & Ludwig (2000), Clinical Massage Therapy.

Therapist Assessment — Read it by sight and touch

A scar is easy to identify. Look first, then palpate gently — the tissue tells you a great deal before you ever begin to work.

Visual inspection — Paler tissue, a darkened line, or a wavy, puckered patch of shiny or discoloured skin.

Palpation — Slightly cooler to the touch; tissue just deep to the scar may feel ropy or tough.

Careful probing — Sensitive probing reveals lumpiness intertwined with a tough smoothness.

Source: Assessment approach consistent with Rattray & Ludwig (2000), Clinical Massage Therapy.



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The Gate To Treatment — Pain-free, and mature only

Two conditions decide whether scar work goes ahead. Get either wrong and you set healing back rather than forward.

Work only the mature scar, and only if probing is pain-free. Treat in the subacute or chronic stage; if palpation causes the client any pain, do not proceed with scar work until pain-free probing is possible.

Treatment Planning

Scarring can be improved but never erased. The plan sets honest goals, places massage among the medical options, and leans hard on daily self-care.

Treatment Options — The medical & surgical toolbox

Scarring cannot be completely eliminated; the goals are to minimise appearance, speed healing and improve mobility. Beyond topical products — whose claims often outrun the evidence — several procedures can alter a scar.

Resurfacing — Dermabrasion removes built-up skin; chemical peels and laser resurfacing even out colour and texture.

Grafting — Healthy skin grafted onto extensively burned or injured areas helps prevent long-term stiffness.

Injection — Cortisone injection can reduce the appearance of keloid or hypertrophic scarring.

Common Medications — Topical scar products

Prescription and over-the-counter products applied to a healing wound can speed epithelial growth and reduce infection. Most are known by brand name — and a physician should be consulted before use.

- Minimise surgical, old, burn, and keloid scars.
- Mederma, Bio-Oil, Kelo-Cote, Dermatrix Ultra.
- Scar Esthetique, Scar Zone, ZENMED, Talsyn-CI.
- Evidence varies — check the manufacturer's claims with a physician.

What they aim to do — — Facilitate repair and speed epithelial tissue growth.

Common brands — — Decrease infection at a healing or post-operative site.

Therapeutic Goals — Reasonable aims for the RMT

Scar work targets the mature scar in the subacute or chronic stage. The aims are concrete and sequential.

Remodel the scar — Remodel the scar tissue itself — softer, more pliable, better organised.

Increase mobility — Improve tissue and joint mobility in the immediate and surrounding areas.

Improve integrity — Support the appearance and structural integrity of the healed skin.

Source: Treatment goals consistent with Rattray & Ludwig (2000), Clinical Massage Therapy.

What Decides the Outcome — Self-care is decisive

This is the defining feature of scar work. The therapist provides expert, focused treatment — but the daily repetition that drives real change happens at home.

Impressive results can follow a single instructional session — if the client does the homework. If the client cannot or will not perform intensive daily self-care, improvement rests on the therapist alone, and will be limited.

Massage Session Frequency — How often, and for how long

Infrequent work, no result: occasional scar work yields no real improvement in appearance or mobility beyond what time alone would bring.

Localised sessions — 15–30 minutes of focused scar work at least once a week.

Larger or joint scars — 30–45 minutes for larger or complicated scars involving a joint.

Daily self-care — Every session must be followed by the client's daily self-care.



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Massage Protocol

Scar work is focused, detailed and firm — and deeply personal. You are remodeling fascia and provoking a controlled healing response, while caring for the person who bears the scar.

Before You Begin — An attitude of positive acceptance

How you regard the scar matters before your hands ever move. Approach it with positive acceptance — you are helping return the body to its highest function, not eradicating something “wrong” with the client.

Positive acceptance — Meet the scar without judgement — it is a record of healing, not a flaw.

Restore function — Frame the work as restoring function and freedom of movement.

See the person — You are treating a person, not removing a defect — let that shape your manner.

The Emotional Dimension — Scars carry a history

Many people who bear scars feel them as unsightly or embarrassing, and a scar often carries an unpleasant emotional history. Trauma-aware care is part of the technique, not separate from it.

Acknowledge feeling — Be aware the scar may carry embarrassment or difficult memories.

Watch the whole person — Attend to the effect of your work on both the tissue and the person bearing it.

Consent & pace — Move at the client’s pace, with clear consent, especially over sensitive areas.

The Core Rationale — Two principles behind every technique

Keep one anatomic aim and one physiologic process in mind throughout. Together they explain why scar techniques work — and why some inflammation is the goal, not a side effect.

- Restore glide, length and pliability.
- Deliberately create a controlled, localised inflammatory response.
- Inflammation and macrophages drive fresh remodeling.
- This — not force — is what truly diminishes the scar.

Remodel the fascia — — Stretch, move and remodel the fascia of the scar.

Provoke a “false” inflammation — — Free the scar from the tissue planes it has bound.

Source: Friction / controlled-inflammation rationale per Rattray & Ludwig (2000), Clinical Massage Therapy and Cyriax, Textbook of Orthopaedic Medicine (deep transverse friction).

The Working Boundary — Focused & firm — but never painful

Scar work is more aggressive than most massage, and that is appropriate. But there is a hard line between productive discomfort and pain.

You may cause discomfort — it is not acceptable to cause pain. Work in a focused, detailed, firm way, watching the tissue and the person, and stay on the discomfort side of that line.

Framing the Deep Work — Warming & stretching

Deep scar techniques are only safe and tolerable inside a frame of warming and stretching — before, to prepare, and after, to settle.

Warm first — Ample warming prepares the tissue and the client for the deep techniques to come.

Stretch around the work — Stretching before and after helps the tissue tolerate and integrate the work.

Bracket every session — Open and close with warming and stretching so the deep work sits safely in the middle.

The Technique Toolkit — What remodels a scar

Scar remodeling draws on the non-Swedish techniques — friction across the fibres, fascial work and joint mobilisation — applied with patience and no instruments.

Cross-fibre frictions — Friction across the grain of the scar to break adhesions and stimulate remodeling.

Fascial & connective work — Fascial and connective-tissue techniques to free and lengthen the bound scar.

Joint mobilisation — Where a scar crosses a joint, mobilisation restores the lost range.



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Source: Technique set per Rattray & Ludwig (2000), Clinical Massage Therapy, Ch. 4 (cross-fibre frictions, fascial & joint-mobilisation techniques).

Tracking Change — Measure before & after

Scar work is slow and incremental, so make the change visible. Record where you start and where you finish, every session.

Before — Note appearance, mobility and range before you begin — your baseline.

During — Track tissue response, softening and the client's comfort as you work.

After — Re-check appearance, mobility and range to show the session's gain and guide the next.

Getting Started — Set-up & the disrobing conversation

A little preparation makes the focused work go well — and the short duration of scar work opens room for other treatment in the same visit.

Hot pack ready — Have a hot pack ready for localised application before you begin.

Plan the visit — Scar work may take only 15–30 minutes — leaving time for relaxation or other requested work.

Discuss disrobing — Talk through the “after scar work” needs with the client before deciding the extent of disrobing.

Contraindications & Cautions — When to wait, and when to stop

Not the acute scar — Don't perform scar work on red, raised, weeping or hypersensitive acute scarring.

Pain-free only — If probing causes pain, stop scar work until pain-free contact is possible.

Refer keloid / hypertrophic — Overgrowth scars may need medical input — coordinate rather than work aggressively.

Mind the person — Watch for emotional distress and stay within consent over sensitive areas.

Source: Contraindications & cautions per Rattray & Ludwig (2000), Clinical Massage Therapy and the lecture protocol.

Key takeaways — Carry these into the clinic

Work the remodeling window — Collagen remodeling runs for months — the long window massage can influence.

Stage before you treat — Acute is hands-off; treat the mature scar in the subacute or chronic stage.

Controlled inflammation is the goal — Friction provokes a “false” inflammatory response that drives remodeling.

Discomfort, never pain — Focused and firm, but pain-free — and never on an acute scar.

Self-care decides the result — Daily home-care is what turns one good session into real change.

Treat the person — Positive acceptance and trauma-aware care are part of the technique.

References and further reading

- Rattray, F. & Ludwig, L. (2000). Clinical Massage Therapy: Understanding, Assessing and Treating Over 70 Conditions. Toronto: Talus Inc. — scar tissue and wounds; the stages of healing; cross-fibre frictions, fascial and joint-mobilisation techniques (Ch. 4); treatment goals and contraindications.
- Cyriax, J. Textbook of Orthopaedic Medicine. — deep transverse (cross-fibre) friction and the controlled-inflammation rationale for remodeling scar and connective tissue.
- Canadian Massage Therapy Council for Accreditation (CMTCA). Competency standards — scope of practice, consent, trauma-aware care, documentation and referral.

Review questions

Answer these from memory before checking the answers below.

1. What is scar tissue, and how does it differ from the tissue it replaces?
2. What is the remodelling window, and what is its significance for treatment?
3. State the pain-free gate that determines when a scar is ready for direct work.
4. Which techniques are used on a mature but adherent scar?
5. Why is client self-care described as decisive in scar work?



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Answers

1. Irregular fibrous tissue laid down to replace normal tissue after injury or incision. Its collagen is deposited in a disorganised arrangement rather than along lines of stress, so it is less elastic, less well vascularised and prone to adhering to surrounding structures.
2. The period after the proliferative stage in which collagen is being reorganised in response to the stresses placed on it. It is the window in which manual work and controlled loading can most influence the orientation and glide of the developing scar.
3. The scar must be fully closed and non-tender, with no heat, redness or discharge. Work does not begin on a scar that is still painful or inflamed.
4. Cross-fibre and circular frictions to mobilise adhesions, skin rolling and myofascial work to restore glide between layers, and graded stretching or range of motion to load the remodelling collagen along functional lines.
5. Because remodelling occurs continuously between appointments. Regular self-massage and movement maintain the gains made in the treatment room, and without them the tissue re-adheres between sessions.