RUHANI COLLEGE
OF HEALTH BUSINESS AND TECHNOLOGY

RU RMT 19 — REMEDIAL EXERCISE & KINESIOLOGY

Exercise Prescription & Clinical Application

Lecture 2 — Parameters, Stages of Healing & Case Reasoning

Registered Massage Therapy Diploma Program · Ruhani College
Aligned to CMTCA accreditation standards and CMTO Standards of Practice

BRIDGE FROM LECTURE 1

Where We Left Off

Foundations established

- Remedial exercise extends treatment; kinesiology is the reasoning behind each choice; prescription is treatment — in scope, consented and documented.

Plans are assessment-driven

- Start small (two activities), progress over time, and select by stage of healing, severity, comorbidities and client goals.

Safe instruction is a sequence

- Warm, explain, demonstrate, teach-back, give kinesthetic feedback, correct, prescribe, confirm.

- *Today we turn 'prescribe' into specific, defensible numbers and stage-appropriate choices.*

LECTURE 2 OUTCOMES

What You Will Be Able to Do

By the end of this lecture, the learner will be able to:

- Define and correctly apply the exercise-prescription parameters.
- Explain how stage of healing, injury type/severity, demographics and goals shape a prescription.
- Select stage-appropriate exercises for acute, sub-acute and chronic presentations, and identify contraindications.
- Sequence progression safely — from minimal to maximal length and strength, and from isometric to eccentric loading.
- Teach self-massage and prescribe hydrotherapy safely as self-care adjuncts.
- Reason through clinical cases to justify appropriate self-care recommendations.

SESSION ROADMAP

How Today Is Organized

1 — Principles of exercise prescription

- The parameters and what a prescription depends on.

2 — Real-world application

- Reasoning through three everyday client presentations.

3 — Exercise & the stages of healing

- Acute, sub-acute and chronic: goals, exercise types and contraindications.

4 — Self-care adjuncts

- Teaching self-massage and prescribing hydrotherapy.

5 — Integrated clinical cases

- Six presentations to reason through and defend.

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SECTION ONE

Principles of Exercise Prescription

The parameters that turn an exercise choice into a specific, progressable, documentable prescription.

PRESCRIPTION OVERVIEW

Anatomy of an Exercise Prescription

A complete prescription specifies dose and direction of change, not just the movement.

Dose parameters

- Repetitions, sets, frequency, intensity and duration define how much the client does.

Direction parameters

- Modification and progression define how the dose changes over time.

Always individualized

- Every parameter is set from assessment and the client's stage of healing, severity, demographics and goals.

Chart it

- Record the full prescription with standardized terminology so it can be reproduced and progressed at the next visit.

PRESCRIPTION PARAMETERS (1 OF 3)

Repetitions & Sets

Repetitions (reps)	The number of times a movement is repeated in a row. Reps drive the volume of work on the target tissue.
Sets	A predetermined number of repetitions grouped together, separated by rest. Sets structure total workload and recovery.
Reps × sets in practice	Lower reps / higher resistance bias strength; higher reps / lighter resistance bias muscular endurance — matched to the client's goal and stage.
Documentation	Always chart reps and sets explicitly (e.g., 2 × 10) so the dose is reproducible and progressable.

PRESCRIPTION PARAMETERS (2 OF 3)

Frequency & Intensity

Frequency	The number of exercise sessions per day or per week. Frequency balances stimulus against recovery time for the tissue.
Intensity	The level of difficulty or challenge of the exercise — the load, resistance or effort required.
Setting intensity	Governed by stage of healing and tolerance; in early healing, intensity is deliberately low to avoid provoking pain or compression.
Monitoring	Use the client's symptom response (pain, swelling, fatigue-driven form loss) to confirm frequency and intensity are appropriate.

PRESCRIPTION PARAMETERS (3 OF 3)

Duration, Modification & Progression

Duration	The length of time a specific action or movement is held (e.g., a stretch or an isometric hold).
Modification	Decreasing the intensity of an exercise while continuing to challenge the tissues to create change — used when a client is over-faced or symptomatic.
Progression	Increasing the intensity of an exercise while continuing to challenge the tissues to create change — used as the client adapts and improves.
The balance	Both keep the tissue appropriately challenged; the therapist adjusts up or down based on re-assessment at each visit.

INDIVIDUALIZING THE DOSE

What Every Parameter Depends On

Remember that all of the parameters are dependent on the clinical picture:

Injury & Healing

Stage of healing

- Acute, sub-acute or chronic — the primary driver of every parameter.

Type & severity of injury

- Nature of the tissue involved and mild / moderate / severe presentation.

The Person

Demographics of the client

- Age, activity history, occupation, comorbidities and lifestyle.

Rehabilitative goals

- Return to function, improved flexibility or strength, or stress reduction.

PROGRESSION

Principles of Safe Progression

Direction of progression

- Because effective self-care plans run for weeks or months, progression is vital. Move from minimal tissue length and strength toward maximum flexibility and strength.

Progress gradually

- Advance one variable at a time (e.g., range, then load) so the source of any symptom change is identifiable.

Watch the response

- If pain or swelling occurs, advise the client to stop the activity immediately; re-evaluation and modification may be necessary.

Re-assess to earn progression

- Progress based on re-assessment findings at each visit, not on a fixed calendar.

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SECTION TWO

Real-World Application

Reasoning through three everyday presentations before we formalize the stages of healing.

REAL-WORLD APPLICATION — A

Restless Sleep & Neck Pain

SCENARIO

A client reports restless sleep and neck pain. During health history they mention they sleep prone with the head twisted to one side; they start supine but inevitably end up prone at some point in the night.

How would you reason toward a self-care plan?

Consider

- Sustained cervical rotation/extension load overnight; likely muscle imbalance and postural contributor.
- Goals: reduce provocative loading, restore comfortable cervical ROM, address sleep positioning as client education.
- Start small: two activities (e.g., gentle pain-free cervical mobility + a positioning/education strategy), then re-assess.

REAL-WORLD APPLICATION — B

The Long-Hours Office Worker

SCENARIO

A client works 12+ hours daily as an office worker. They were moderately active in youth but have since reduced physical activity due to work and family. They complain of neck stiffness and occasional low back pain.

What self-care direction fits this presentation?

Consider

- Prolonged sustained postures; deconditioning; likely postural dysfunction rather than acute injury (chronic pattern).
- Goals: movement breaks, postural strengthening/mobility, gradual reconditioning matched to a busy schedule.
- Feasibility matters: prescribe brief, repeatable activities that fit into a workday to protect adherence.

REAL-WORLD APPLICATION — C

The Multi-Sport, Time-Poor Professional

SCENARIO

A client is an avid runner competing in half-marathons and marathons, also plays golf and occasional hockey, and works out 3–4 times a week. They work 10+ hours as a law-firm partner and have a young child.

How do high load and low time change your approach?

Consider

- High cumulative training load with limited recovery time; overuse and load-management risk more than deconditioning.
- Goals: mobility/recovery, imbalance correction, and load-management education rather than adding volume.
- Match demographics & goals: efficient, targeted self-care that complements — not competes with — heavy training.

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SECTION THREE

Exercise & the Stages of Healing

How goals, appropriate exercise types and contraindications change across acute, sub-acute and chronic stages (cf. K&C, pp. 298–304).

STAGES OF HEALING

The Three Stages at a Glance

Prescription follows the tissue. As healing progresses, we do more.

Acute

- Inflammation and protection. Any movement is beneficial only if it does NOT increase pain or inflammation. Gentle, minimal loading.

Sub-acute

- Repair and early remodelling. Pain is no longer constant; begin restoring ROM, endurance, flexibility and scar mobility.

Chronic

- Remodelling and return to function. Progress to functional, strengthening, chain, eccentric, stabilization and dynamic work.
- *Boundaries between stages are clinical judgments from re-assessment, not fixed dates.*

ACUTE STAGE (CF. K&C PP. 298–300)

Acute: Principles & Overall Aim

Guiding rule

- Any movement at this stage is beneficial so long as it does NOT increase pain or inflammation.

Overall aim

- Protect the healing tissue while gently maintaining movement to limit stiffness, swelling and muscle guarding.

Expect small ranges

- Initial movement will probably be very small — that is appropriate, not a failure.

Intensity is deliberately low

- Nothing that causes pain or joint compression; err toward too little rather than too much.

ACUTE STAGE

Acute: PROM & AROM

What to use

- Passive range of motion (PROM) and active range of motion (AROM) are the mainstays of early movement.

Why

- Gentle PROM/AROM helps decrease pain, swelling and muscle guarding without overloading healing tissue.

How

- Keep ranges pain-free and small; stop at the first sign of increased pain or inflammation.

Kinesiology link

- Recall PROM vs AROM (Lecture 1): choose based on how much the client can safely move themselves.

ACUTE STAGE

Acute: Isometrics & Contraindications

Isometric Muscle Contractions

- Use gentle, very low-intensity isometric contractions.
- Avoid causing pain or joint compression.

Muscle injury

- Perform in a shortened muscle position.

Joint injury

- Perform in a resting position of the joint.

Contraindications

- Do NOT perform stretching in areas of inflammation or the affected tissue.
- Do NOT perform isotonic resistance exercises in areas of inflammation or the affected tissue.

When in doubt, hold and reassess

- If an activity increases pain or swelling, stop; modify or defer to the next stage.

SUB-ACUTE STAGE (CF. K&C PP. 300–302)

Sub-Acute: Goals

As pain settles, we shift from protection toward restoration.

- Increase pain-free ROM.
- Increase muscular strength and endurance.
- Increase flexibility of the affected muscles.
- Increase mobility of scar and stimulate proper alignment of developing scar tissue.
- Correct weakness or imbalances elsewhere in the body that may be contributing to the site of injury.

SUB-ACUTE STAGE

Sub-Acute: Balancing Return to Activity

The client feels better

- Pain is no longer constant and ROM has increased — motivation to resume activity rises.

Encourage a return, carefully

- You can encourage a return to normal activities so long as they do not aggravate the healing process.

Find the balance

- Progress movement enough to prevent adhesions to other structures, but not so much that it disrupts healing and delays recovery.
- *This balance is the defining clinical skill of the sub-acute stage.*

SUB-ACUTE STAGE

Sub-Acute: Isometrics & Controlled Movement

Multiple-Angle Submaximal Isometrics

Purpose

- Initiate control and strengthening in the involved muscles.

Position

- Perform in a shortened or relaxed position of the muscle, or resting position of the joint.
- 'Multiple-angle' begins re-loading through more of the range as tolerance improves.

AROM Exercises

Focus

- Emphasize proper mechanics and movement quality.

Why now

- Active, controlled range rebuilds motor control and confidence within the pain-free range.
- Carry over the quality-of-movement cues from Lecture 1.

SUB-ACUTE STAGE

Sub-Acute: Endurance & Stretching

Muscular Endurance

Intensity

- Low intensity.

Volume

- High repetitions.

Resistance

- Light resistance.
- Builds capacity without overloading healing tissue.

Stretching

Purpose

- Increase extensibility and flexibility of tissues and help increase ROM.

Now permissible

- Stretching is appropriate here (recall: it was contraindicated in inflamed/affected tissue during the acute stage).
- Progress intensity of stretch as tolerance and re-assessment allow.

CHRONIC STAGE (CF. K&C PP. 302–304)

Chronic: Goals

Remodelling and return to full function — we now progress toward maximal capacity.

- Progress to functional exercises.
- Progress strengthening exercises to include open- and closed-chain exercises.
- Progress from concentric to eccentric exercises.
- Progress trunk stabilization, postural control and balance exercises.
- Progress exercises to safely stress maturing connective tissue.
- Progress stretching by increasing intensity or including dynamic stretching.

CHRONIC STAGE

Chronic: Functional & Chain Progressions

Functional Exercise

What it means

- Exercises that resemble the client's real-life and goal activities (work, sport, daily tasks).

Why now

- Maturing tissue can tolerate task-specific demand; training transfers to the client's goals.
- Design functional work backward from the client's rehabilitative goal.

Open & Closed Chain

Open chain

- Distal segment free — isolates and strengthens a target muscle/joint.

Closed chain

- Distal segment fixed — trains coordinated, weight-bearing, functional patterns.
- Progress to include both as strength and control allow.

CHRONIC STAGE

Chronic: Concentric → Eccentric Progression

The progression

- Progress from concentric (shortening) loading toward eccentric (lengthening-under-load) work as tissue tolerance builds.

Why eccentric later

- Eccentric loading places high demand on connective tissue and is powerful for building capacity — so it is introduced once tissue can safely tolerate it.

Also progressing in parallel

- Trunk stabilization, postural control and balance work advance, and stretching progresses via higher intensity or dynamic stretching.
- *Progress one variable at a time and confirm tolerance by re-assessment.*

STAGES OF HEALING — CONSOLIDATION

The Full Arc: Acute → Sub-Acute → Chronic

Acute

- Protect. PROM/AROM, gentle low-intensity isometrics; no stretching or isotonic resistance in inflamed tissue.

Sub-acute

- Restore. Multiple-angle submaximal isometrics, quality AROM, low-intensity/high-rep endurance, stretching for extensibility; balance return with healing.

Chronic

- Return to function. Functional, open/closed chain, concentric→eccentric, stabilization/balance, and progressed/dynamic stretching.
- *Throughout: respect pain, progress by re-assessment, and document every change.*

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SECTION FOUR

Self-Care Adjuncts

Teaching self-massage and prescribing hydrotherapy safely as part of the plan.

SELF-CARE ADJUNCTS

Teaching Self-Massage: Principles

Demonstrate, then have them do it

- Demonstrate a specific technique on yourself, then have the client perform the same technique — the same teach-back rule as for exercise.

Pair with diaphragmatic breathing

- Diaphragmatic breathing helps manage pain and discomfort and gives the client a focus while performing the technique.

Go slowly for effect

- Techniques like petrissage (specifically stripping and kneading) and fascial work (like skin rolling) are more effective when done slowly.

Palpate correctly

- Correct palpation for trigger points matters; teach the client where and how to find the target.

SELF-CARE ADJUNCTS

Self-Massage: Tools & Safe Use

Devices & equipment

- Tools such as tennis balls or lacrosse balls can be used for ischemic compression of trigger points.

Apply gently

- Ischemic compression with these tools should be done gently — teach the client to control pressure and duration.

Teach safe self-monitoring

- The client should ease off with increasing sharp pain, numbness or tingling; comfort and control over intensity.

Within scope & documented

- Recommend only techniques you can teach safely; chart what you prescribed and demonstrated.

SELF-CARE ADJUNCTS

Hydrotherapy as Self-Care: Benefits

If considering hydrotherapy as self-care, understand what it does:

- Helps stimulate the immune system.
- Helps regulate the production of stress hormones.
- Improves digestion, circulation and blood flow.
- Relaxes the body and helps reduce sensitivity to pain.
- *Because it is water-based and low-cost, hydrotherapy is an accessible adjunct for many clients — matched to the presentation and any precautions.*

SELF-CARE ADJUNCTS

Hydrotherapy: Modalities & Application

Cold Applications

Examples

- Ice packs and ice baths.

Typical use

- Managing acute inflammation, pain and swelling within tolerance.
- Protect skin; limit duration; monitor sensation.

Heat Applications

Examples

- Thermophores (moist heat packs), paraffin, hot tubs.

Typical use

- Relaxation, circulation and comfort once acute inflammation has settled.
- Avoid over acute inflammation; check contraindications.

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SECTION FIVE

Integrated Clinical Cases

Six presentations to reason through — identify the stage, set goals, choose stage-appropriate activities, and justify your plan.

CLINICAL CASE 1

Post-Fracture: Cast Just Removed

SCENARIO

Your client had their cast removed 2 days ago after fracturing their radius 6 weeks ago. The immobilized limb is now available for movement.

Which exercises would you recommend at this point?

Reasoning cues

- Post-immobilization: expect stiffness, ROM loss and disuse weakness; tissue is healing but deconditioned.
- Likely start with gentle pain-free AROM/PROM to restore range, then submaximal work as tolerated; progress by re-assessment.
- Screen for pain/swelling response; stay within scope and coordinate with the client's physician as appropriate.

CLINICAL CASE 2

Ankle: Resolving ATFL Sprain

SCENARIO

Your client still has swelling in their ankle from an ATFL sprain suffered three weeks ago. They no longer have redness or heat in the area and very little remaining pain.

Which exercises would you recommend?

Reasoning cues

- Signs (no heat/redness, minimal pain, residual swelling) suggest a sub-acute presentation.
- Appropriate: pain-free AROM, submaximal strengthening, gradual endurance, and stretching for extensibility; begin proprioception/balance as tolerated.
- Avoid provoking swelling; progress by re-assessment; watch return-to-activity balance.

CLINICAL CASE 3

Frozen Shoulder: Frozen Stage

SCENARIO

Your client is in the frozen stage of frozen shoulder. They are very restricted in abduction, external rotation and flexion of the glenohumeral joint. There is noticeable atrophy in the deltoid and infraspinatus.

Which exercises would you recommend?

Reasoning cues

- Marked capsular ROM restriction (abduction, ER, flexion) plus disuse atrophy (deltoid, infraspinatus).
- Prioritize gentle pain-free ROM within tolerance and activation of atrophied muscles; progress gradually.
- Set realistic expectations, respect irritability, avoid aggressive stretching into pain; coordinate care as needed.

CLINICAL CASE 4

Recurrent Shoulder Dislocation

SCENARIO

Your client dislocated their shoulder for the third time last week — the third dislocation in three years. Their shoulder now feels stiff and achy.

Which exercises would you recommend?

Reasoning cues

- Recent (last week) instability event: prioritize protection and stability, not end-range or provocative positions.
- Favour gentle pain-free movement and stability/control work within safe ranges; avoid positions of instability (e.g., end-range abduction + external rotation).
- Recurrent dislocation warrants caution and coordination with the client's physician; stay within scope.

CLINICAL CASES 5 & 6

Post-Surgical Scar vs Acute Inflammation

CASE 5 — HIP REPLACEMENT (LAST YEAR)

Your client had a hip replacement last year. They have a scar over the greater trochanter and over glute medius, feel limited in hip movements due to the scar, and feel weak around the hips.

Recommendation? *Chronic/remodelling: scar mobility work, hip strengthening (glute med), functional/closed-chain progression; respect surgical precautions and coordinate with the surgeon's guidance.*

CASE 6 — ACUTE OLECRANON BURSITIS (3 DAYS AGO)

Your client fell on their elbow three days ago; it is very swollen, warm and somewhat red. Their doctor diagnosed bursitis.

Recommendation? *Acute inflammation: protect and settle symptoms; gentle pain-free movement only; NO stretching or isotonic resistance in the inflamed area; cold hydrotherapy within tolerance; defer loading until inflammation resolves.*

CONSOLIDATION & SOURCES

Lecture 2 — Takeaways, References & Verification

Key takeaways

- Prescribe a full dose (reps, sets, frequency, intensity, duration) with direction (modification/progression); individualize to stage, severity, demographics and goals; select stage-appropriate exercise and adjuncts; progress by re-assessment and document everything.

Primary text

- Kisner, C. & Colby, L.A. — Therapeutic Exercise: Foundations and Techniques (current edition); stages-of-healing content approx. pp. 298–304.

Regulatory & accreditation

- CMTO Standards of Practice; RHPA & Massage Therapy Act (Ontario); CMTCA accreditation standards; inter-jurisdictional competency framework (FOMTRAC / performance indicators).
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