72b Orthopedic Massage: Techniques & Effects

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Class Outline

15 minutes	Break
5 minutes	Attendance, Breath of Arrival, and Reminders
10 minutes	Lecture
70 minutes	1st trade Lecture with technique demo and practice
20 minutes	Break and switch tables
70 minutes	2nd trade Lecture with technique demo and practice
20 minutes	Break down, clean up, and discussion

3 hours and 30 minutes total

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Class Reminders

Quizzes:

- 78a Kinesiology Quiz (erectors, lats, quadratus lumborum, multifidi, rotatores, gluteals, hamstrings, quads, piriformis, quadratus femoris) –
  50 questions in 40 minutes

Spot Checks:

- 75b Orthopedic Massage: Spot Check – Piriformis and Sacroiliac
- 78b Orthopedic Massage: Spot Check – Low Back Pain

Assignments:

- 85a Orthopedic Massage: Outside Massages (2 due at the start of class)

Preparation for upcoming classes:

- 73a Orthopedic Massage: Introduction – Piriformis and Sacroiliac

  Trail Guide (Quadratus Femoris and Piriformis)

  Packet J: 49-54.
- 73b Orthopedic Massage: Technique Demo and Practice - Piriformis and Sacroiliac

  Packet J: 55-62.
- 74a MBLEx Prep – see syllabus for reviews topics

Classroom Rules

Punctuality - everybody's time is precious

- Be ready to learn at the start of class; we'll have you out of here on time
- Tardiness: arriving late, returning late after breaks, leaving during class, leaving early

The following are not allowed:

- Bare feet
- Side talking
- Lying down
- Inappropriate clothing
- Food or drink except water
- Phones that are visible in the classroom, bathrooms, or internship

You will receive one verbal warning, then you'll have to leave the room.

72b Orthopedic Massage: Techniques & Effects

Packet J - 36

Massage Techniques

Effleurage Lubricate, warming, fluid movement, muscle tension reduction.

Wringing Fluid movement, warming, enhance pliability, muscle tension reduction.

Fulling/Compression Broadening Reduce adhesions, myofascial elasticity and pliability.

Massage Techniques, continued

Deep transverse friction (AKA: deep cross fiber friction) Breaks cross-linking bonds of fibrous scar tissue, stimulates fibroblast activity, realigns collagen fibers helping to prevent adhesion formation.

Deep longitudinal stripping (AKA: deep fiber stripping) Deactivate trigger points, reduce hypertonicity, assess tissue quality.

Melting Deactivate trigger points, reduce hypertonicity, assess tissue quality. Sustained pressure held to allow tissue to soften.

Deep transverse friction (AKA: deep cross-fiber friction)

Example: sacroiliac ligament sprain

1. Client is in the prone position
2. Locate the sacroiliac ligaments
   - Midway along the sagittal plane between the PSIS and the spinous processes on the sacrum (aka midline or mid-sagittal plane), from S3 to L5
3. Address one side and then the other
   - Use thumbs or finger tips with hands stacked for stability
   - Work in a superior-inferior direction
   - Use moderate pressure for about 1 minute
4. Results
   - Stimulates fibroblasts to produce collagen needed to repair torn ligaments
   - Removes adhesions (breaks cross-linking bonds of fibrous scar tissue)
   - Reweaves and remodels scar tissue to mature and strengthen it

Massage Techniques, continued

Myofascial release (AKA: MFR)

- Application of sustained tensile force to connective tissue.
- Reduces muscle tension and increases tissue pliability.
- Fascia is rich with mechanoreceptors, such as Ruffini endings found in the superficial fascia, which detect skin stretch and sustained presence on the skin.
- MFR has a neurologic effect that seems to decreases fascial contraction.

Stretching

- Resets the muscle's resting length.
- When fascia remains shortened for prolonged periods of time it tends to adopt the shortened position.
- Long periods in this state can lead to fibrous cross-linking in fascial tissue, which can result in limits to motion.

Myofascial Techniques: Superficial fascia assessment

- Evaluates health, integrity and function of the superficial fascial layer
- Gauges starting tissue quality
- Information gathering throughout session as tissues change
- Areas closer to bony landmarks will have less give as fascia dives down into deeper fascia

Superficial Fascial layer = subcutaneous layer

- Hypodermis – layer below the dermis (not a true skin layer)
- Anchors skin to underlying structures - muscles, aponeuroses, bone, viscera, etc.
- Consists of connective tissue, adipose (fat), and nerve receptors

There are many different Myofascial Techniques……the following example is from Whitney Lowe – author of Orthopedic Massage– Theory and Technique

Superficial fascia assessment, continued

Example: Assessing low back superficial fascia

1. Client is in the prone position with shirt pulled up and pants slightly lowered
2. Locate the target area
   - From S1 to T10, and from side to side.
3. Work without lubricant, address one side and then the other
   - Use your palm or finger pads to apply light tangential (pulling) pressure
   - Place your hands/finger pads flatly on the skin surface
   - "Hook in" to tissue just enough to traction the superficial fascia without sliding across skin
   - Slowly traction in all directions taking note of restrictions
   - Use before and after myofascial release of the superficial fascia to gauge progress
4. Optional: repeat on another area such as the calves

Myofascial Techniques: Myofascial release

Example: releasing restricted low back fascia

1. Client is in the prone position with shirt pulled up and pants slightly lowered

2. Locate the target area

   - From S1 to T10, and from side to side

3. Work without lubricant, address one side and then the other

   - Cross-arm stretch: place hands on either side of the spine traction apart to take up slack in tissue
   - Apply light degree of "pulling force", pushing hands apart to stretch myofascial tissue
   - Hold. Wait for a subtle sensation of tissue release or a working sign. May be held for 30-60 sec., but can be held up to 2-5+ mins.
   - Should be done in multiple directions across low back region

4. Repeat on another area such as the calves, but without crossed arms

Inhale and exhale

Ahhh!

Now shifting to something different

Active and Passive Engagement

Massage with **passive** engagement

- Simultaneous combination of massage technique and passive joint mobilization
- Massage stroke and (passive) joint movement **controlled by therapist**
- These movements will either shorten or lengthen the target muscle
- Magnifies the effects of the stroke
- Client is instructed to relax their muscles during the stroke

Massage with **active** engagement

- Simultaneous combination of massage technique and active joint movement
- Therapist applies massage stroke while **client performs** (active) joint movement
- These movements will either shorten or lengthen the target muscle
- Magnifies the effects of the stroke
- **Only use if the target muscle can contract without pain**

Massage with Passive Engagement

Passive engagement with **shortening**

- First the therapist applies static compression to an area of the muscle that has a heightened neurological response such as a myofascial trigger point, an area of restricted fascial movement or muscle tightness.
- Next the therapist uses passive joint movement to shorten and broaden the target muscle.
- Used to treat severe muscle spasm following acute injury
- This technique is very similar to strain/counter-strain used in positional release therapy

Massage with passive engagement shortening

Example: myofascial trigger point at levator scapula insertion

1. Client is in the prone position
2. Therapist applies static compression to Levator scapula with thumb of inside hand, near superior angle of scapula for 20 to 90 seconds
3. Therapist uses passive joint movement to shorten and broaden levator scapula, by grasping lateral border of scapula with outside hand and pulling toward inside hand. Hold for release or working sign.

Another example: Myofascial trigger point in biceps brachii

1. Client is supine, abduct arm to 60 degrees, lat. Rotate so biceps is facing ceiling, elbow bent to 90 degrees, palm facing shoulder
2. Apply static compression to trigger point, slowly flex elbow while maintaining compression until pain/spasm decreases
3. Therapist can hold final position for 20-90 seconds

Massage with passive engagement

Passive engagement with **lengthening**

- First the therapist uses passive joint movement to shorten the target muscle
- Next the therapist pins or strips the target muscle and simultaneously uses passive joint movement to lengthen the target muscle. Reset and choose another place to pin target muscle, repeat passive joint movement
- Results in:
  - Mobilization of connective tissue
  - Reduction of muscular tension
  - Elongation of myofascial tissue
- Referred to as “Pin and Stretch”

Massage with passive engagement lengthening

Example: Fascial restriction and muscle tension of the hamstrings

1. Client is in the prone position.

2. Therapist uses passive joint movement to shorten and broaden the target muscle

3. Next the therapist pins or strips the target muscle and simultaneously uses passive joint movement to lengthen the target muscle

(Shorten – Compress – Lengthen – Release – Reset – Repeat)

Alternative example: Gastroc/soleus BMT

Side by Side Comparison

Passive engagement with shortening

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Now shifting to something different

Massage with Active Engagement

Active engagement = Client actively moves joint thru muscle contraction

Muscle contraction = force generated by muscle fibers sliding past each other within the contractile unit (sarcomere)

Types of Muscle Contractions

- **Isotonic contraction** = muscle length changes due to force generation
  - **Concentric contraction** = shortening of a muscle as it generates force (ex. lifting a weight)
  - **Eccentric contraction** = lengthening of a muscle as it generates force (ex. Lowering a weight)
- **Isometric contraction** = muscle length does not change as force is generated (Ex. Holding a heavy object or planking)

Massage with active engagement

Active engagement with **shortening**

Shortening = Concentric contraction

- First the target muscle starts in a fully lengthened position
- Next the therapist melts into or fulls (spreads) the fibers of target muscle while the client concentrically contracts the target muscle
- Results in:
  - Enhanced broadening of the muscle during concentric contraction
  - Removal of inter-fiber adhesions

Massage with active engagement shortening

Example: restricted concentric contraction in triceps surae

1. Client is prone with feet hanging off the end of the massage table.
2. First the target muscle starts in a fully lengthened position:
   - "I'm going to have you help me with this next technique"
   - "Please pull the top of your foot against the end of the table (dorsiflexion)"
3. Next the therapist melts or fulls into the target muscle while the client concentrically contracts the target muscle:
   - Now, slowly point your toes (plantarflexion)"

Massage with active engagement

Active engagement with **lengthening**

Lengthening = Eccentric contraction

- First the therapist instructs client to actively contract the target muscle, so the muscle is in a fully shortened position to start.

- Next the therapist melts into or strips the target muscle while the client contracts the antagonists to lengthen the target muscle

- Results in:
  - Decreased muscle tightness
  - Reduction of trigger points
  - Elongation of tissues

Note: Some muscles are prone to cramping when fully contracted – Most common in muscles that cross more than 1 joint – ex. Hamstrings or gastroc – Stop immediately and stretch muscle in opposite direction.

Massage with active engagement lengthening

Example: hypertonic forearm flexors with trigger points and restricted length

1. Client is in the supine position.

2. First the target muscle starts in a fully shortened position:

   - "I'm going to have you help me with this next technique"
   - "Please curl your fingers into a fist and flex your wrist"

3. Next the therapist applies static compressions or performs deep longitudinal stripping to the target muscle(s) while the client lengthens the target muscled(s):

   - Now, slowly uncurl your fingers while fully extending your wrist"

Side by Side Comparison

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Now shifting to something different

Active-assisted stretching

Active-assisted stretching Active engagement of specific muscular contraction by the receiver prior to or during a stretch. Uses the neurological principles of PIR and RI. Active-assisted stretching methods consistently show the greatest gain in ROM versus static (passive) stretching.

Post-isometric relaxation (AKA: PIR) Neurological principle stating that immediately following an isometric contraction, there is an increased degree of relaxation in the muscle.

Reciprocal inhibition (AKA: RI) Neurological principle stating that when an agonist contracts, the antagonist is neurologically inhibited from contracting.

Post-isometric relaxation and reciprocal inhibition

Example: active-assisted hamstring stretch

- Hip joint mobilizations
- Instruct the client:
  - "I'm going to stretch your hamstrings."
  - "Let me know when you begin to feel this stretch."
  - (Supporting the knee to avoid hyperextension, flex the leg until the client says that they can feel the stretch in the hamstrings.)
  - "Inhale and hold your breath. Using only 25% of your strength, press the back of your thigh down toward the table against my resistance and I will count down from 5." (isometric contraction)
  - "Slowly exhale and release the contraction." (PIR)
  - "Now pull your thigh toward your chest until you feel a stretch in your hamstrings. I'll follow you with my hands and support your leg." (RI)
  - "Relax your leg and I will hold it here for a stretch."
- Hold the stretch for three of your breath cycles
- Slowly release the stretch and repeat hip joint mobilizations

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