Varus stress 0 and 20 degrees flexion (LCL)
McMurray test (meniscus)
Apley's compression test (meniscus)
Apley's distraction test (ligament damage)
Pivot shift (chronic ACL)
Fox test (meniscus)
Bounce home test (hyperextension)

Range of Motion: Bilateral Comparison

Active
Passive
  Extension
  Flexion

Manual Muscle Tests: Bilateral Comparison

Extension (Quadriceps)
Flexion (Hamstrings)

Neurological Tests

Knee jerk reflex (L4)

Functional Tests

Toe raise (bilateral then injured side only)
Hopping (bilateral then injured side only)
Walk
Jog
Run
Cutting
Carioca
Figure 8 (large to small)
Sport specific activities
1. Ask student to explain and demonstrate a complete evaluation of the thigh/hip, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

**History**

___ How did it happen? (Mechanism)
___ Hear a snap or pop?
___ Have you hurt it before? (Previous history)
___ Where does it hurt? (Location of pain)
___ What type of pain is it?
___ What brought on pain? (Gradual onset or acute)
___ What activities increase pain?
___ What do you do for relief of pain?
___ When do you have pain? Does it persist into the night?

**Observation/Inspection**

___ Swelling
___ Deformity
___ Discoloration

**Palpation**

___ Anterior Superior Iliac Spines
___ Iliac Crest
___ Greater Trochanter
___ Posterior Superior Iliac Spines
___ Ischial Tuberosity
--- Sacroiliac Joint

*Muscles from origin to insertion*

--- Vastus lateralis
--- Rectus femoris
--- Vastus medialis
--- Adductors (Longus, Magnus, Brevis, Pectineus, Gracilllis)
--- Sartorius
--- Semitendinosus
--- Semimembranosus
--- Biceps femoris
--- Gluteus Maximus
--- Gluteus Medius
--- Tensor facia latae/ Iliotibial tract

**Special Tests**

--- Thomas Test (Flexion Contracture)
--- Ober Test (Contraction of Iliotibial Band)
--- Noble's Test (IT band friction syndrome)
--- Trendelenburg Test (Gluteus medius weakness)
--- Leg length discrepancy (Measure from ASIS to med. malleolus)

**Range of Motion: Bilateral Comparison**

--- Knee extension
--- Hip flexion
--- Hip adduction
--- Hip abduction
--- Knee flexion
--- Hip extension
--- Hip internal rotation
--- Hip external rotation
Manual Muscle Tests: Bilateral Comparison

___ Knee extension (Quadriiceps)
___ Hip Flexion (Rectus femoris, Iliopsoas group)
___ Sartorius (Hip abduction, flexion, external rotation)
___ Hip adduction (Adductor group)
___ Knee flexion (Hamstrings)
___ Hip extension (Gluteus maximus)
___ Hip abduction (Gluteus medius)

Neurological Tests

*None necessary for thigh/hip evaluation*

Functional Tests

___ Active range of motion
___ Quarter Squat (bilateral and unilateral)
___ Hopping (bilateral then injured side only)
___ Walk
___ Jog
___ Run
___ Cutting
___ Carioca
___ Figure 8 (large to small)
___ Sport specific activities
RECOGNITION AND EVALUATION: LUMBAR SPINE

1. Ask student to explain and demonstrate a complete evaluation of the lumbar spine, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

History
  ____ How did it happen? (Mechanism)
  ____ Hear a snap or pop?
  ____ Have you hurt it before? (Previous history)
  ____ Where does it hurt? (Location of pain)
  ____ What type of pain is it?
  ____ Any numbness tingling in extremities?
  ____ What brought on pain? (Gradual onset or acute)
  ____ What activities increase pain?
  ____ What do you do for relief of pain?
  ____ When do you have pain? Does it persist into the night?

Observation/Inspection
  ____ Swelling
  ____ Discoloration
  ____ Deformity
  ____ Posture (Normal lordosis, kyphosis)
  ____ Symmetry of musculature

Palpation
  ____ Iliac crests
  ____ Spinous Processes
Sacrum
Coccyx
Posterior Superior Iliac Spines
Paraspinal Muscles
Gluteus Maximus
Sciatic Nerve

Range of Motion and Muscle Tests
Flexion- repeated forward bending in standing and supine
Extension- repeated extension in standing and prone
Lateral Bending
Rotation

Special Tests
Straight leg raising test (Nerve/Disc problem)
Pelvic Rock (SI joint involvement)

Neurological Tests
Dermatomes:
Directly above knee- L3
Medial lower leg and foot- L4
Lateral lower leg and dorsum of foot- L5
Lateral malleolus, side of foot- S1

Myotomes:
Knee extension- Femoral N.
Dorsiflexion- Deep peroneal N.
Eversion- Peroneal N.
Plantarflexion- Tibial N.

Functional Tests
Active ROM
Sport specific activities
RECOGNITION AND EVALUATION: ABDOMEN AND CHEST

1. Ask student to explain and demonstrate a complete evaluation of the abdomen/chest, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

History
____ How did it happen? (Mechanism)
____ Hear a snap or pop?
____ Have you hurt it before? (Previous history)
____ Where does it hurt? (Location of pain)
____ What type of pain is it?
____ What brought on pain? (Gradual onset or acute)
____ What activities increase pain?
____ What do you do for relief of pain?
____ When do you have pain? Does it persist into the night?
____ Pain on inspiration/expiration?
____ Blood in urine?
____ Dizziness or shortness of breath?

Observation/Inspection
____ Swelling
____ Deformity
____ Discoloration
____ Pale face, skin (sign of shock)
____ Position of trachea (pneumothorax)
Palpation

- Lower abdomen
- Lower right abdomen (appendicitis)
- Kidneys (referred pain into legs)
- Stomach
- Spleen (referred pain to left arm - Kehr's sign)
- Liver (referred pain to right arm)
- Sternum and xiphoid process
- Sternocostal and Costochondral joints
- Ribs

Special Tests

- Lateral compression of rib cage (fracture)
- Anterior/Posterior compression of rib cage (fracture)

Range of Motion

- Active only
  - Trunk flexion
  - Trunk extension
  - Trunk lateral flexion
  - Trunk rotation

Manual Muscle Tests

- Trunk flexion (rectus abdominis)
- Trunk extension (Sacrospinalis, erector spine, etc.)
- Trunk lateral flexion (transverse abdominis)
- Trunk rotation (internal and external obliques)
Neurological Tests

*None necessary for abdomen/chest evaluation

Functional Tests

____ Sport specific activities
RECOGNITION AND EVALUATION: THE SHOULDER

1. Ask student to explain and demonstrate a complete evaluation of the shoulder, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

History
___ How did it happen? (Mechanism)
___ Hear a snap or pop?
___ Have you hurt it before? (Previous history)
___ Where does it hurt? (Location of pain)
___ What type of pain is it?
___ What brought on pain? (Gradual onset or acute)
___ What activities increase pain?
___ What do you do for relief of pain?
___ When do you have pain? Does it persist into the night?
___ Do you have any numbness or tingeling in your arm/hand?

Observation/Inspection
___ Swelling
___ Deformity
___ Discoloration
___ Posture/Symmetry

Palpation
___ Sternoclavicular joint
___ Length of clavicle
___ Acromioclavicular joint
Coracoid process
Supraspinatus muscle
Spine of scapula
Infraspinatus
Teres major and minor
Posterior axillary wall (latissimus dorsi)
Axilla
Anterior axillary wall (pectoralis major)
Deltoid (anterior, middle, posterior)
Trapezius
Greater and lesser tuberosities (rotator cuff insertion)
Bicipital groove

Range of Motion: Bilateral Comparison
Performed actively and passively
Apley "Scratch" Test
Flexion/Extension
Abduction/Adduction
Internal/External rotation (neutral and 90)
Horizontal flexion/extension
Elbow flexion/extension

Manual Muscle Testing: Bilateral Comparison
Flexion/Extension
Abduction/Adduction
Internal/External rotation (neutral and 90)
Horizontal flexion/extension
Elbow flexion/extension
Special Tests

___ Apprehension test (dislocation/subluxation)
___ Winging scapula (serratus anterior weakness)
___ A-C separation tests (hand to opposite shoulder- resist abduction, bouncing clavicle)
___ Jobe's empty can (supraspinatus weakness/impingement)
___ Impingement test (flexion to 90 with forced internal rotation)
___ Yergason test (stability of long head of biceps tendon)
___ Speed's test (bicipital tendonitis)
___ Adson Maneuver (thoracic outlet syndrome)

Neurological Tests

___ Cervical spine/upper extremity dermatomes
___ Cervical spine/upper extremity myotomes

Functional Tests

___ Sport specific activities
1. Ask student to explain and demonstrate a complete evaluation of the elbow, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

**History**
- [ ] How did it happen? (Mechanism)
- [ ] Hear a snap or pop?
- [ ] Have you hurt it before? (Previous history)
- [ ] Where does it hurt? (Location of pain)
- [ ] What type of pain is it?
- [ ] What brought on pain? (Gradual onset or acute)
- [ ] What activities increase pain?
- [ ] What do you do for relief of pain?
- [ ] When do you have pain? Does it persist into the night?

**Observation/Inspection**
- [ ] Swelling
- [ ] Deformity
- [ ] Discoloration
- [ ] How they're carrying arm

**Palpation**
- [ ] Medial epicondyle
- [ ] Ulnar groove
- [ ] Origin of triceps
- [ ] Olecranon process
Lateral epicondyle
Origin of biceps
Wrist flexors
Wrist extensors
Head of radius
Annular ligament
Length of radius
Length of ulna

Special Tests
Valgus stress (Medial collateral ligament)
Varus stress (Lateral collateral ligament)

Range of Motion: Bilateral Comparison
Actively and passively
Flexion
Extension
Pronation
Supination

Manual Muscle Tests: Bilateral Comparison
Flexion (Biceps, Brachialis, Brachioradialis)
Extension (Triceps)
Pronation (pronator teres and quadratus)
Supination (biceps and supinator)
Wrist flexion and extension

Neurological Tests
Biceps reflex
Triceps reflex
___ Brachioradialis reflex
___ Upper extremity myotomes/dermatomes

Functional Tests
___ Sport specific activities
RECOGNITION AND EVALUATION: THE WRIST AND FINGERS

1. Ask student to explain and demonstrate a complete evaluation of the wrist and fingers, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

**History**

___ How did it happen? (Mechanism)
___ Hear a snap or pop?
___ Have you hurt it before? (Previous history)
___ Where does it hurt? (Location of pain)
___ What type of pain is it?
___ What brought on pain? (Gradual onset or acute)
___ What activities increase pain?
___ What do you do for relief of pain?
___ When do you have pain? Does it persist into the night?

**Observation/Inspection**

___ Swelling
___ Colle's fracture
___ Ganglion
___ Murphy sign (dislocation of lunate)
___ Mallet finger (Distal extensor tendon avulsion)
___ Boutonnier deformity (Central extensor tendon avulsion)
___ Volkman's ischemic contractures (pale, reduced radial pulse)
___ Discoloration
Palpation

____ Carpal bones
    Proximal row: navicular, lunate, triquetrium, pisiform
    Distal row: trapezium, trapezoid, capitate, hamate

____ Styloid process of radius and ulna

____ Metacarpal/Carpal joints

____ Length of metacarpals

____ Metacarpophalangeal joints

____ Proximal interphalangeal joints

____ Distal interphalangeal joints

Special Tests

____ Valgus/Varus stress of MP, PIP, DIP joints

____ Finkelstein Test (de Quervain's Disease)

____ Phalen's test (Carpal tunnel)

____ Tinel sign (Carpal tunnel)

Range of Motion: Bilateral Comparison

____ Performed actively and passively

____ Wrist flexion/extension

____ Radial/Ulnar deviation

____ Pronation/Supination

____ Finger flexion/extension

____ Finger abduction/adduction

____ Thumb opposition

Manual Muscle Testing: Bilateral Comparison

____ Wrist flexion (flexor carpi radialis & ulnaris)

____ Wrist extension (extensor carpi radialis longus & brevis/ulnaris)

____ Radial/Ulnar deviation

____ Pronation/Supination
Finger flexion (flexor digitorum profundus & superficialis)
Finger extension (extensor digitorum communis, extensor indicis, extensor digiti minimi)
Finger abduction/adduction (palmar & dorsal interossi)
Thumb opposition (opponens pollicis)

**Neurological Tests**
Upper extremity dermatomes/myotomes

**Functional Tests**
Sport specific activities
RECOGNITION AND EVALUATION: CERVICAL SPINE

1. Ask student to explain and demonstrate a complete evaluation of the cervical spine, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

---

**History**

___ How did it happen? (Mechanism)
___ Hear a snap or pop?
___ Have you hurt it before? (Previous history)
___ Where does it hurt? (Location of pain)
___ What type of pain is it?
___ Any numbness tingling in extremities?
___ What brought on pain? (Gradual onset or acute)
___ What activities increase pain?
___ What do you do for relief of pain?
___ When do you have pain? Does it persist into the night?

**Observation/Inspection**

___ Conscious/unconscious
___ Position of athlete
___ Posture/symmetry (muscular atrophy, holding one arm lower, etc.)
___ Swelling
___ Deformity
___ Discoloration

---
Palpation

- Occiput
- Inion (bump of knowledge, occipital tuberosity)
- Mastoid process
- Spinous processes of cervical spine
- Transverse processes of cervical spine
- Trapezius - origin to insertion
- Deltoid

Range of Motion

- Tested actively; passively also if no spinal instability is suspected.
- Flexion
- Extension
- Lateral flexion
- Rotation

Strength Tests

- Flexion (Sternocleidomastoids)
- Extension (Paravertebral muscles, trapezius)
- Lateral flexion (Scalenes)
- Rotation (Sternocleidomastoid)

Neurological Tests: Bilateral Comparison

Dermatomes

- C5 - lateral upper arm
- C6 - lateral forearm, thumb, index finger
- C7 - middle finger
- C8 - ring and little finger, medial forearm
- T1 - medial upper arm
Myotomes

___ Axillary N. (Deltoid)
___ Musculocutaneous N. (Biceps Brachii)
___ Radial N. (Triceps, wrist extensors, finger extensors)
___ Median N. (Wrist flexors)
___ Ulnar N. (Finger flexors, finger ab/adduction)

Special Tests

___ Distraction Test
___ Compression Test

Functional Tests

*None necessary for cervical spine evaluation.
1. Ask student to explain and demonstrate a complete evaluation of head injuries, including history, observation, palpation, active and passive range of motion, manual muscle tests, neurological tests, special tests, and functional tests.

2. Please check off as student explains and demonstrates the following:

---

**Emergency Procedures**

- Survey Scene
- Primary survey (ABC's)
- CPR or Rescue breathing if situation requires it.
- Establish consciousness/unconsciousness

**History**

- How did it happen? (Mechanism)
- Hear a snap or pop?
- Have you hurt it before? (Previous history)
- Where does it hurt? (Location of pain)
- Do you have a headache?
- Did you ever black out or lose consciousness?
- Ask questions to determine level of consciousness. (note speech pattern, rate and time of response)

**Observation/Inspection**

- Leakage of CSF from nose or ears
- Deformity
- Swelling
- Discoloration
____ Pupils
   ___ Symmetry
   ___ Dialated
   ___ Reaction to light
   ___ Tracking (Smooth or Nystagmus)
   ___ Ability to focus
   ___ Vision

Palpation
___ Skull if possible
___ Cervical spine if possible
___ Pulse
___ Sensations in extremities
___ Movement/Strength of extremities

Special Tests
___ Walking straight line
___ Romberg sign

* Monitor level of consciousness
* Refer if necessary
** Student must produce proof of competency in adult or community CPR by presenting a copy of his/her valid CPR card. Affix copy of card to this page.
ISOKINETIC TESTING AND INTERPRETATION OF TEST RESULTS
(USING THE CYBEX 6000)

1. Ask student to explain and demonstrate the set up and administering of a concentric/concentric isokinetic test of either the knee or the shoulder (IR/ER modified). Also, ask them to print out a bilateral short report and explain and interpret the test results.

2. Please check off as the student demonstrates competency in administering an isokinetic test and interpreting its resultant data by performing the following:

** This test assumes that the student has already demonstrated competency in the operation of the CYBEX 6000 by passing the Sophomore competency test in this area.

Testing

___ Selects "Test Program" from the Cybex Applications Menu.

___ Enters client information, including joint to be tested.

___ Tests uninvolved side first.

___ Selects a facility protocol.

___ Uses proper set up and positioning.
   (See Sophomore competency "Operation of Isokinetic Testing Devices: Cybex 6000" for proper set up for knee/shoulder.)

___ Administers test for uninvolved side.

___ Selects "Save Test Data" at Post Test Menu.

___ Selects "Test Other Side" at Post Test Menu.

___ Uses identical set up and protocol for opposite side, but changes anatomical zero and ROM stops.

___ Administers test for involved side.

___ Selects "Save Test Data" at Post Test Menu.

___ Selects "Print Bilateral Short Report" at Post Test Menu.

___ Selects desired speeds to be printed (Up to 3 speeds may be selected.)
Evaluating Test Results

*For each concentric action*

- Identifies and explains Peak Torque (ft-lbs) for each speed.

- Identifies and explains Peak Torque as a % of Body Weight for each speed, and compares these to norms:
  - Quadriceps: Male- 80-100%
    Female- 60-80%
  - Hamstrings: Male- 45-60%
    Female- 40-50%

- Identifies and explains Total Work (BWR) in ft-lbs for each speed.

- Identifies and explains Total Work (BWR) as % of Body Weight for each speed.

- Identifies and explains Average Power (BWR) in watts for each speed.

- Identifies and explains negative and positive deficits.

- Identifies and explains Peak Torque Ratios for each speed and compares them to norms (if available):
  - Hamstring/Quadriceps ratio = 63%

- Makes recommendations based on test results (Continue rehab, return to play, etc.)
MUSCLE SHORTENING TESTS

1. Ask student to explain and demonstrate the following muscle shortening tests, using proper positioning of the patient, and evaluating the results of the tests.

___ Pectoralis - Supine, hands clasped behind head, low back flat on table. Looking to see if both elbows rest on table.

___ Hip flexors (Thomas Test) - Supine, hands clasped below knee, pull one knee to chest. Looking to see if opposite thigh remains on table.

___ Hamstrings (Straight leg raise) - Supine, arms resting on table above head. Flex hip keeping knee extended. Should be able to flex to 90°.

___ Hamstrings (Phelps Test) - Supine, hip flexed to 90°, extend knee. Should be able to fully extend knee.

___ Medial Hamstrings/Gracilis (Phelps-Baker Test) - Supine, thighs abducted and flexed, knees flexed, subject extends hips and knees. Looking for adduction of knees.

___ Lumbar extensors - Sitting on table with knees fully extended, reach for toes. Inability to touch toes indicates shortening.

___ Tensor fascia latae/Iliotibial band (Ober Test) - Sidelying, subject flexes lower hip to 90°. Stabilize pelvis, abduct and extend other leg, then let it adduct. Looking to see if leg fully adducts.

___ Rectus femoris (Ely Test) - Prone, subject flexes knee. Looking for raising of buttocks off table which indicates shortening.

___ Gastrocnemius/Soleus - Sitting on table, knees extended, leaning back supporting weight on hands. Dorsiflex both ankles. Should dorsiflex to 105°.
THERAPEUTIC MODALITIES: ULTRASOUND

1. Ask student to explain and demonstrate the proper set up and administration of ultrasound treatment for a specific condition.

2. Please check off as student demonstrates competency in using ultrasound by performing the following:

Preparation of Patient

___ Requests athlete to remove clothing from area.
___ Positions athlete comfortably.
___ Places towel over clothing if treatment area is near rolled up shirt, shorts.
___ Asks if athlete has ever had ultrasound before.
___ Explains sensations to be experienced.
___ Instructs athlete to report pain, burning, discomfort.

Treatment

___ Applies good amount of coupling agent.
___ Chooses right size sound head for treatment area.
___ Chooses correct duty cycle for situation
___ Selects appropriate treatment time.
___ Turns up or sets intensity to appropriate watts/cm².
___ Applies transducer appropriately.

___ Overlapping circles at least 50%.
___ Slow rate (4 cm per second).
___ Maintains good contact between sound head and skin.
___ Asks athlete how it feels (sensations experienced).
___ Adds more coupling agent if necessary.

Questions to Ask

1. How does ultrasound work?
2. What chemical and physical effects does it have?
3. When is ultrasound indicated/contraindicated?
THERAPEUTIC MODALITIES: DC MUSCLE STIMULATION

1. Ask student to explain and demonstrate proper set up and administration of a treatment with direct current muscle stimulation for a certain condition.

2. Please check off as student demonstrates competency in using DC stimulation by performing the following:

Preparation of Athlete

___ Requests athlete to remove all clothing, metal jewelry, etc. from treatment area.

___ Positions athlete comfortably.

___ Checks treatment area for wounds, skin conditions, decreased sensation.

___ Asks athlete if they have ever had muscle stim. before.

___ Explains sensations to be experienced.

___ Tells athlete to report any pain, discomfort, or unusual sensations.

___ Checks connection between pads and cables.

___ Wets down electrode and dispersive pads.

___ Securely fastens electrodes to area being treated.

___ Securely fastens dispersive pad to large surface area away from treatment area.

Treatment

___ Makes sure intensity nob has been turned to zero before turning on machine.

___ Selects continuous, pulsed, or reciprocate modulation depending on situation.

___ Sets appropriate pulses per second and phase duration for situation.

___ Selects either positive or negative polarity as indicated by situation.

___ Sets appropriate treatment time.
____ Increases intensity (voltage) slowly instructing athlete to notify them when they first feel anything and then just when it starts to get uncomfortable.

____ Asks patient if they feel sensations equally under both electrodes and adjusts balance between pads if necessary.

____ Checks to see if desired muscle contraction is being achieved (if applicable to situation).

____ Instructs athlete to notify them if they experience any problems or need the intensity turned up.

____ Checks up on athlete periodically.
THERAPEUTIC MODALITIES: IONTOPHORESIS

1. As student to explain and demonstrate the proper set up and administration of iontophoresis for a specific condition.

2. Please check off as student demonstrates competency in using iontophoresis by performing the following:

Preparation of the Athlete

___ Requests the athlete to remove all clothing, metallic objects, etc. from the treatment area.

___ Positions the athlete comfortably.

___ Asks athlete if they have ever had iontophoresis before.

___ Explains how iontophoresis works and what sensations to be experienced.

___ Notifies athlete that iontophoresis can occasionally cause skin irritation or burns, and frequently causes redness of skin under electrodes that goes away within 1-3 hours.

___ Checks skin for wounds, skin conditions, moles, birth marks.

___ Cleans selected electrode sites with alcohol.

Application of the Electrodes

___ Removes paper backing from electrodes.

___ Inspects electrode absorbent pads and replaces them with gauze pad, if necessary.

___ Places rectangular drug delivery electrode flat on area to be treated and affixes it with tape, if necessary.

___ Connects red drug electrode lead to electrode snap.

___ Places round return electrode on a flat area near and on the same side of the body as the drug delivery electrode, and affixes it with tape, if necessary.
Connects black return electrode lead to the electrode snap.

Plugs lead wires into applicator cable.

**Treatment**

- Draws up 2-3 mL of drug solution using a syringe.
- Proportionally divides drug solution into holes of drug delivery electrode.
- Draws 8 mL of distilled water or saline solution into a syringe.
- Places 2 mL of water into each of the four holes of the return electrode.
- Chooses the correct polarity (same polarity as drug chosen).
- Turns iontophoresis unit on.
- Selects manual mode.
- Pushes dose button and sets desired dose in milliamp-minutes.
- Pushes start and increases current intensity to 1.0 or to level of athlete tolerance.
- Instructs athlete to report any pain, discomfort, unusual sensation.
- Checks up on patient periodically.

**Questions to ask**

1. How does iontophoresis work?
2. What are indications/contraindications of iontophoresis?
1. Ask student to explain and demonstrate four different types of massage, effleurage, petrissage, tapotement, deep transverse friction. Ask them to include patient preparation and positioning as well as administering the massage itself.

2. Please check off as the student demonstrates competency massage techniques by performing the following:

EFFLEURAGE

___ Asks athlete to remove clothing from area being treated.

___ Positions patient comfortably, so that they are relaxed.

___ Elevates area to be treated if possible.

___ Applies lubricant to area.

___ Starts with light strokes in direction of venous flow.

___ Uses circular motion with pressure on up stroke and none on the down stroke.

___ Maintains constant rhythmical strokes.

PETRISSAGE

___ Asks athlete to remove clothing from area being treated.

___ Positions patient comfortably, so that they are relaxed.

___ Elevates area to be treated if possible.

___ Gently squeezes, lifts, and relaxes muscles.

___ Hands move from distal to proximal point of muscle attachment.

___ Muscle is grasped parallel to or at right angles to the muscle fibers.

TAPOTEMENT (PERCUSSION)

___ Asks athlete to remove clothing from area being treated.
Positions patient comfortably, so that they are relaxed.

Elevates area to be treated if possible.

Keeps hands relaxed.

Performs different percussion strokes:

- Hacking- using ulnar boarder of hand.
- Slapping- using fingers.
- Beating- using half closed fist.
- Tapping- using tips of fingers.

DEEP TRANSVERSE FRICTION

Asks athlete to remove clothing from area being treated.

Positions patient comfortably, so that they are relaxed.

Places tissue to be treated in proper position.

- For muscle- relaxed
- For tendon- most accessible position.
- For ligament- massaged in extremes of ROM.
- For sheathed tendon- massaged on stretch.

Moves superficial tissue over the underlying tissue.

Uses fingers, or thumb for pressure.

Applies pressure perpendicular to direction of fibers.
THERAPEUTIC MODALITIES: TRITON MP-1 TRACTION UNIT

1. Ask student to explain and demonstrate the proper set up and administration of mechanical lumbar and cervical traction using the Triton MP-1 traction unit.

2. Please check off as student demonstrates competency in using mechanical traction by performing the following:

LUMBAR TRACTION

___ Applies pelvic harness to patient while they are standing next to traction table.

___ Makes sure there is no clothing between harness and skin if possible.

___ Makes sure that upper belt is just above level of the iliac crest.

___ Applies thoracic harness so rib pads are over lower rib cage.

___ Asks athlete if pads are comfortable.

___ Positions athlete on table so that lumbar spine is in neutral position. Choose one:

___ Prone with pillow under abdomen
___ Supine with legs flexed to approximately 90°.

___ Hooks thoracic harness straps to table.

___ Grasps "S" hook or rope while pushing rope release lever and attaches "S" hook to pelvic harness straps.

___ Pushes rope release lever to take up all the slack in the rope.

___ Gives patient control cord to the athlete and instructs the athlete that pressing the red button stops the traction cycle.

___ Depresses green power switch.

___ Selects maximum pounds by pressing the "Max-Level" switch and enters amount. (approx. 50% body wt.)

___ Selects minimum pounds by pressing the "Min-Level" switch and enters amount.
Selects steps up by pressing the "Steps Up" switch and enters the number of steps desired. (Usually 1-4)

Selects steps down in same manner as above.

Selects appropriate type of traction:
- S= static
- I= intermittent

Sets number of seconds for hold or rest time (if necessary).

Selects treatment time by pressing "TX Time" switch and entering the desired time.

Presses the "Lumbar" switch.

Pushes "Start" button to begin traction.

Re-checks patient comfort.

CERVICAL TRACTION

Attaches cervical device and adjusts the angle of the device by raising or lowering the table or traction pedestal. (Angle should allow for 20-30 degrees of neck flexion.)

Separates neck wedge sufficiently.

Places folded towel in neck wedge for patient comfort.

Asks patient to remove earrings.

Positions patient on the table supine with neck wedge located at the mid cervical region.

Tightens neck wedge very firmly against neck.

Secures head strap using small towel for padding and comfort if desired.

Attaches traction rope to hole at top of head pad.

Gives athlete the patient control cord and instructs him/her on when and how to use it.

Turns on power.

Selects maximum pounds (above 20 is recommended).

Selects minimum pounds.

Selects number of steps up and down.
Selects type of traction to be used (Intermittent is recommended).

Selects hold and rest time.

Enters in appropriate treatment time.

Presses "Lumbar" switch if maximum pounds is greater than 39.

Pushes start button to begin traction.

Checks to make sure cervical wedge is just below tip of ear lobes. (It should not be pushing ears up.)

Checks to make sure neck wedge does not touch the angle of the jaw.

If neck wedge does touch the angle of the jaw, reduces angle of neck flexion by placing a pillow under athlete's back.

Re-checks for patient comfort.
SENIOR COMPETENCIES

Domain II: Recognition and Evaluation

1. Incorporation of appropriate examination techniques and procedures into an effective, systematic scheme of clinical evaluation.

Domain III: Management/Treatment and Disposition

1. Performance of cardiopulmonary resuscitation (CPR) techniques according to current standards, including assessment of level of consciousness and vital signs and identification and removal of airway obstructions due to anatomical or mechanical causes.

Domain IV: Rehabilitation

1. Application of proprioceptive neuromuscular facilitation (PNF) techniques for development of muscular strength/endurance, muscle stretching, and improved range-of-motion.

2. Application of passive and resistive underwater/pool exercise for the improvement of joint range-of-motion, muscular strength, etc.

Domain V: Organization and Administration

1. Project involving designing and laying out a floor plan for a hypothetical training room, working with an allotted budget to order equipment and supplies, and keeping record purchases with the proper forms.

Domain VI: Education and Counseling

1. Presentation of a research project in front of a class or at a Sports Medicine Club meeting.

2. Demonstrating ability to impart knowledge to others by teaching one day in a lower level athletic training course or lab, or by teaching the athletic training competencies class.
1. While under the supervision of a certified athletic trainer, the student must demonstrate his/her systematic scheme of clinical evaluation on actual injured athletes encountered during the season.

2. This competency must be based on a minimum of three supervised evaluations.

3. Please check off if student showed competency in systematically evaluating injuries by performing the following:

- Attains good history.
- Conducts good observation and inspection.
- Conducts sufficient palpation for the specific condition.
- Conducts all applicable special tests.
- Checks all ranges of motion.
- Performs necessary manual muscle tests.
- Conducts applicable functional tests.
- Comes to sound conclusions and has good impression of the injury.
- Is able to conduct evaluation in systematic fashion.
- Is consistent with their system in all evaluations.
** Student must produce proof of competency in adult or community CPR by presenting a copy of his/her valid CPR card. Affix copy of card to this page.
PROPrioceptive Neuromuscular Facilitation

1. Ask student to explain and demonstrate all the strengthening and stretching techniques used in proprioceptive neuromuscular facilitation, including D1 and D2 patterns for the upper and lower extremity.

2. Please check off as the student demonstrates competency in PNF techniques by performing the following:

STRENGTHENING TECHNIQUES

___ Repeated Contraction- repeated isotonic movements against maximal resistance until fatigue.
   * Useful for weakness in specific arc or through entire range.

___ Slow Reversal- isotonic contraction of antagonist followed immediately by isotonic contraction of the agonist. Instruct athlete to push against maximal resistance by using the antagonist and then to pull by using the agonist.
   * Used for developing active range of motion of the agonists and normal reciprocal timing between the antagonists and agonists.

___ Slow Reversal-Hold- isotonic contraction of the agonist followed immediately by a command to "hold" (an isometric contraction).
   * Useful in developing strength at a specific point in the range of motion.

___ Rhythmic Stabilization- isometric contraction of the agonist followed by an isometric contraction of the antagonist. Always command athlete to "hold."
   * Results in an increase in holding power.

___ Rhythmic Initiation- progression of passive, then active-assistive, and then active movement through the agonist pattern. Movement is through available ROM.
   * Used on athletes who are unable to initiate movement or have a limited range of motion.
STRETCHING TECHNIQUES

 Contract-Relax- move body part passively into the agonist pattern. Instruct athlete to "push" contracting the antagonist isotonically against resistance. Then instruct athlete to relax while part is moved passively into agonist pattern to point of limitation.

* Used when ROM is limited by muscle tightness.

 Hold-Relax- begin with isometric contraction of the antagonist followed by a concentric contraction of the agonist along with light pressure from the athletic trainer.

* Used when ROM is limited by antagonist muscle tightness.

 Slow Reversal-Hold-Relax- begin with isotonic contraction of the antagonist followed by an isometric contraction. Then when the antagonist is relaxing, the agonist is contracting thereby stretching the antagonist.

* Used when ROM is limited by antagonist muscle tightness.

 Can perform D1 and D2 pattern for shoulder

 D1- Starting position: Flex./Add./Ext.Rot.
 Ending position: Ext./Abd./Int.Rot.
 D2- Starting position: Flex./Abd./Ext.Rot.
 Ending position: Ext./Add./Int.Rot.

 Can perform D1 and D2 pattern for hip.

 D1- Starting position: Flex./Add./Ext.Rot.
 Ending position: Ext./Abd./Int.Rot.
 D2- Starting position: Flex./Abd./Ext.Rot.
 Ending position: Ext./Add./Int.Rot.

Reference

POOL EXERCISE

1. Ask student to explain and demonstrate a pool workout for a lower extremity injury as they progress through the second and third phases of rehabilitation.

2. Please check off as the student demonstrates competency prescribing pool exercise by performing the following:

____ Asks athlete if they can swim.

____ Makes sure there is a lifeguard on duty during the rehabilitation.

____ Starts with non-weight bearing cardiovascular workouts in the beginning of phase II.
   ____ Deep water running
   ____ Swimming using a pull buoy between the legs

____ Uses the 4:1 ratio of swimming to running distances (ie. every ¼ mile swum = 1 mile run) when prescribing cardiovascular exercise.

____ Simulates sport-specific running patterns in non weight-bearing activities.

____ If injury is to hip/thigh or knee:
   ____ Asks athlete to perform water resisted hip abduction, adduction, flexion, and extension while standing in the shallow end.
   ____ Asks athlete to perform water resisted lower extremity PNF diagonal patterns while standing in the shallow end.

____ Progresses to weight bearing activities in late phase II, including shallow water running for a cardiovascular workout.

____ Has good progression through weight bearing activities in shallow water.
   ____ Running
   ____ Cutting
   ____ Hopping on both feet
   ____ Hopping on injured leg
   ____ Jumping- deep knee bend
   ____ Bounding side to side

____ Simulates sport-specific patterns in weight bearing activities in shallow end.

Note: Weight bearing in shallow water is not full weight bearing because of buoyant effect of water.


Instructions for the Model 6560S Meditrode Iontophoretic Delivery Electrode Kit (1989).


