



Comprehensive Musculoskeletal Evaluation and Treatment

A Systematic Regional Approach to Clinical Assessment

DrTroy Continuing Education

Course #PT-MSK-001

3 CCUs

Complete Coverage: Cervical • Thoracic • Lumbar • SI Joint • Shoulder
• Elbow • Wrist • Hip • Knee • Ankle

Course Information

Course Description

This comprehensive continuing education course provides physical therapy professionals with systematic, evidence-based approaches to musculoskeletal evaluation and treatment across all major body regions. Participants will learn examination techniques, special tests with diagnostic accuracy metrics, differential diagnosis strategies, and evidence-informed interventions for the cervical spine, thoracic spine, lumbar spine, sacroiliac joint, shoulder, elbow, wrist/hand, hip, knee, and ankle/foot.

Target Audience

This course is designed for licensed physical therapists seeking to enhance their musculoskeletal examination skills and clinical decision-making abilities.

Course Objectives

Upon completion of this course, participants will be able to:

1. Perform comprehensive regional musculoskeletal evaluations using systematic, evidence-based examination approaches
2. Apply and interpret special tests with knowledge of sensitivity, specificity, likelihood ratios, and clinical utility
3. Identify red flags and recognize when immediate physician referral is indicated
4. Develop differential diagnoses based on subjective history and objective examination findings

5. Design evidence-based, region-specific treatment plans tailored to specific pathologies
6. Integrate examination findings to formulate clinical diagnoses and prognoses
7. Document findings using appropriate clinical reasoning frameworks

Instructional Method

This is a self-paced online course delivered through written content with illustrative figures. The course includes:

- 12 instructional modules with anatomical illustrations
- Special test demonstrations with diagnostic accuracy data
- Clinical pearls and caution boxes highlighting key concepts
- 20-question knowledge check assessment

Course Instructor

Troy Hounshell, PT, ScD

Dr. Hounshell is a physical therapist with over 25 years of clinical experience across outpatient, inpatient, home health, and skilled nursing settings. He is the CEO of Texas Therapy Pros and holds a Doctor of Science in Physical Therapy from Texas Tech University Health Sciences Center.

Disclosure Statement

Financial Disclosure: Troy Hounshell, PT, ScD is the owner of Texas Therapy Pros and DrTroy Continuing Education, the company selling this course. He receives financial compensation from course sales. This relationship has been reviewed and the

content has been developed to ensure objectivity and balance in presentation.

Non-Financial Disclosure: The instructor has no other non-financial relationships to disclose that would create a conflict of interest regarding this educational activity.

Content Development: The content of this course was developed based on current evidence-based practice and established clinical guidelines. All recommendations are supported by peer-reviewed literature and standard physical therapy practice patterns.

Completion Requirements

To successfully complete this course and receive continuing education credit, participants must:

1. Review all course materials
2. Complete the 20-question knowledge check with a score of 70% or higher
3. Complete the course evaluation

Time Allocation

Module	Content	Time
1	Introduction to MSK Evaluation	20 min
2	Cervical Spine	18 min
3	Thoracic Spine	15 min
4	Lumbar Spine	20 min
5	SI Joint	12 min

6	Shoulder	20 min
7	Elbow	12 min
8	Wrist and Hand	12 min
9	Hip	15 min
10	Knee	18 min
11	Ankle and Foot	15 min
12	Clinical Reasoning	35 min

Total: 3 CCUs

Important Note on Special Tests

Clinical Judgment Required: This course presents selected special tests commonly used in musculoskeletal evaluation. It is not an exhaustive or comprehensive list of all available tests. Clinical judgment should always dictate which tests are performed for each individual patient. Consider the patient's presentation, contraindications, and the diagnostic utility of each test when making examination decisions. Special tests should be performed only when indicated by the patient's history and initial examination findings.

Module 1: Introduction to MSK Evaluation

(20 minutes)

1.1 Examination Model

FIGURE 1: Examination Sequence Flowchart (SOAP Format)

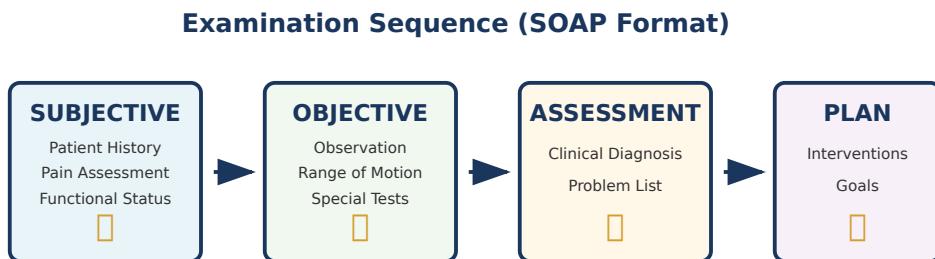


Illustration showing the systematic examination process: Subjective (patient history, pain assessment, functional limitations), Objective (observation, ROM, special tests, palpation), Assessment (diagnosis, impairments), and Plan (interventions, goals). Arrows indicate the cyclical nature of reassessment.

The systematic examination follows four phases: Subjective, Objective, Assessment, and Plan (SOAP).

Subjective Examination Components

- Chief complaint and history of present illness
- Pain assessment (location, quality, intensity, aggravating/relieving factors)
- Functional limitations and patient goals

- Medical history, medications, social history

Objective Examination Components

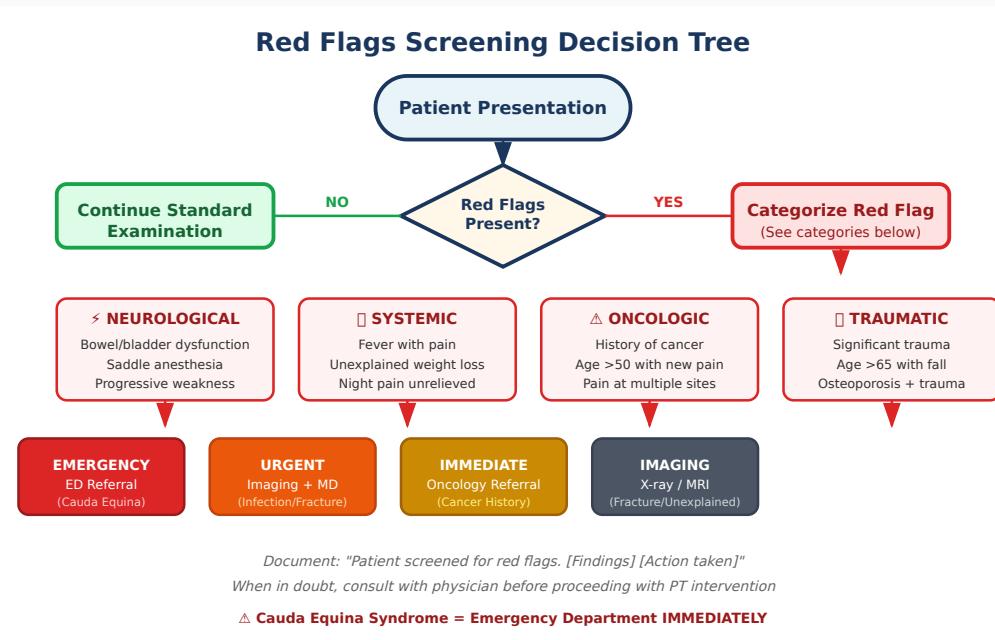
- Observation (posture, gait, functional movements)
- Active and passive range of motion
- Resisted isometric testing
- Special tests
- Palpation
- Neurological examination when indicated

1.2 Red Flags Screening

Red Flag	Potential Pathology	Action
Bowel/bladder dysfunction with back pain	Cauda equina syndrome	EMERGENCY ED referral
Saddle anesthesia	Cauda equina syndrome	EMERGENCY ED referral
Progressive neurological deficits	Spinal cord compression	Urgent referral
Unexplained weight loss >10%	Malignancy	Immediate referral
Night pain unrelieved by position	Tumor, infection, fracture	Immediate imaging
Fever with musculoskeletal pain	Infection	Urgent evaluation

History of cancer with new pain	Metastatic disease	Immediate imaging
Trauma age >65	Fracture	Immediate imaging

FIGURE 2: Red Flags Decision Tree

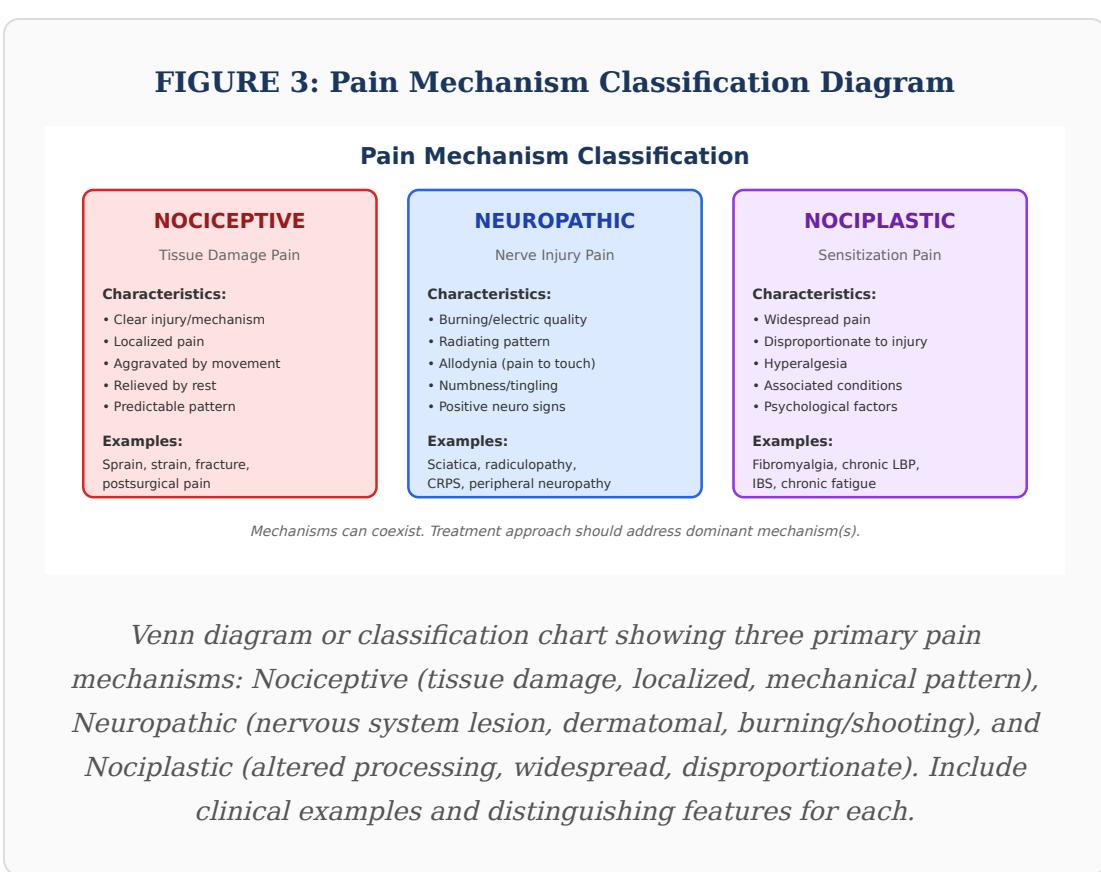


Flowchart diagram showing the decision-making process for red flag screening. Starting with initial patient presentation, branches lead to various red flag categories (neurological, systemic, oncological, traumatic) with corresponding actions: emergency referral, urgent imaging, or continue with standard examination.

Documentation: Always document red flag screening:
"Patient screened for red flags including [list]. No red flags identified."

1.3 Pain Mechanisms

FIGURE 3: Pain Mechanism Classification Diagram



Venn diagram or classification chart showing three primary pain mechanisms: Nociceptive (tissue damage, localized, mechanical pattern), Neuropathic (nervous system lesion, dermatomal, burning/shooting), and Nociplastic (altered processing, widespread, disproportionate). Include clinical examples and distinguishing features for each.

Nociceptive Pain

From actual tissue damage. Localized, mechanical pattern, responds to treatment.

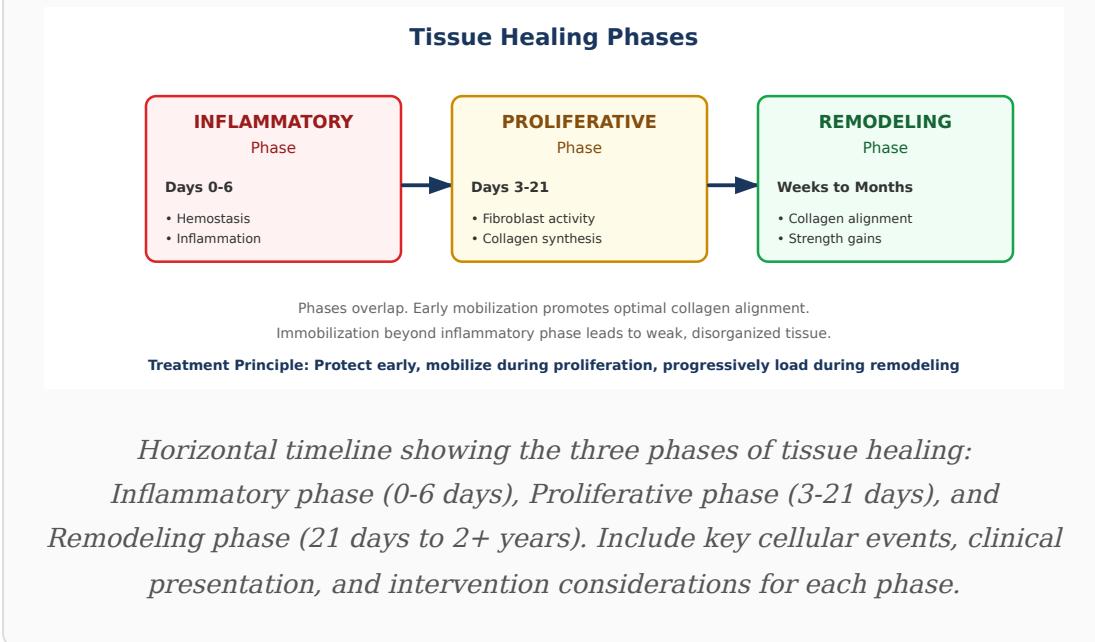
Neuropathic Pain

From nervous system lesion. Burning/shooting, dermatomal distribution, night symptoms.

Nociplastic Pain

Altered pain processing. Widespread, disproportionate, psychosocial factors.

FIGURE 4: Tissue Healing Phases Timeline



Module 2: Cervical Spine (18 minutes)

2.1 Anatomy

FIGURE 5: Cervical Spine Anatomy — Gray's Anatomy Plates (1918)

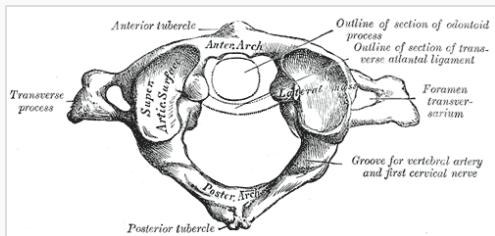


Plate 86: Atlas (C1)

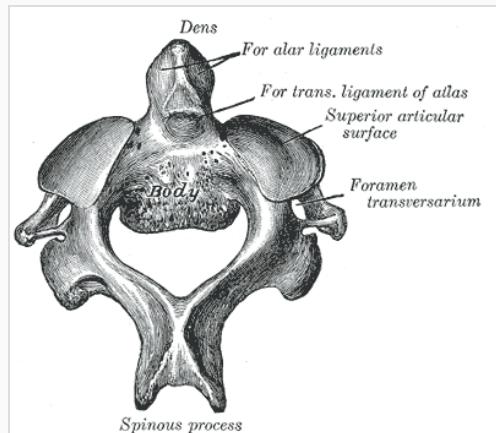


Plate 87: Axis (C2) — superior view

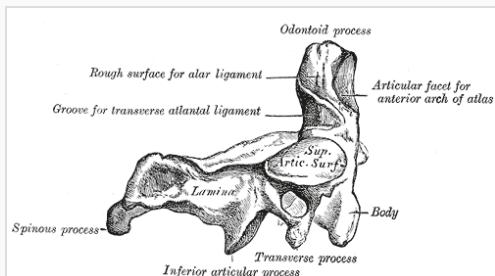


Plate 88: Axis (C2) — lateral view

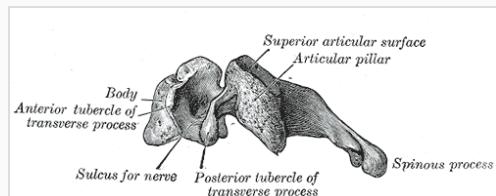


Plate 85: Typical vertebra (C3-C6)

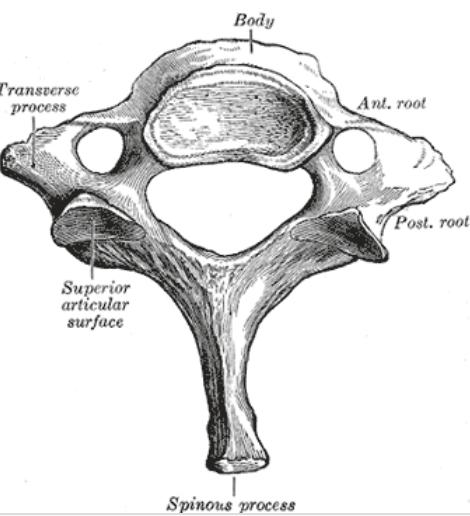


Plate 89: Vertebra prominens (C7)

Classic anatomical illustrations from Henry Gray's Anatomy of the Human Body, 20th edition (1918). Plate 86: Atlas (C1) — supports the skull; Plate 87-88: Axis (C2) — features the dens for rotational movement; Plate 85: Typical cervical vertebra (C3-C6); Plate 89: Vertebra prominens (C7) — long spinous process landmark. Public domain.

Upper Cervical (C0-C2)

- C0-C1: 50% of flexion/extension
- C1-C2: 50% of rotation via dens pivot
- Vertebral arteries vulnerable to manipulation

Lower Cervical (C3-C7)

- Discs C2-C7
- Uncovertebral joints guide movement
- Facet joints at 45 degrees

2.2 Cervical ROM

Movement	Normal	Functional
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Flexion	0-80	0-45
Extension	0-70	0-45
Side bend	0-45	0-30
Rotation	0-80	0-60

2.3 Special Tests

Spurling's Test (Foraminal Compression)

Purpose: Cervical nerve root compression

Technique: Extend, laterally flex, rotate toward symptomatic side; apply axial compression

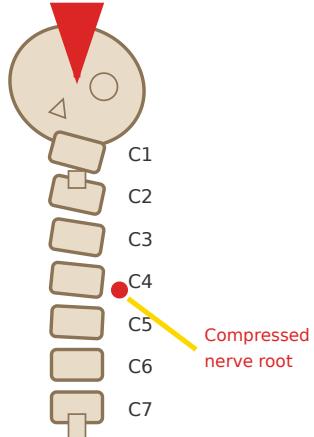
Positive: Radicular arm symptoms

Accuracy: Sens 30%, Spec 93% (highly specific)

Contraindications: Severe osteoporosis, fracture, vertebral artery insufficiency

FIGURE 6: Spurling's Test Illustration

Spurling's Test Illustration



Test Position

- Cervical extension
- Side bending and rotated toward symptomatic side

Positive Test

Reproduction of ipsilateral radicular symptoms (pain, numbness, tingling)

Diagnostic Accuracy

Sensitivity: 30-50% | Specificity: 90-100%

CAUTION

Contraindicated with cervical instability, myelopathy, or acute fracture

Illustration showing examiner performing Spurling's test on seated patient.

Patient's neck is extended, laterally flexed, and rotated toward the symptomatic side while examiner applies gentle axial compression through the head. Arrows indicate direction of movement and force application.

Distraction Test

Purpose: Confirm radiculopathy by relieving compression

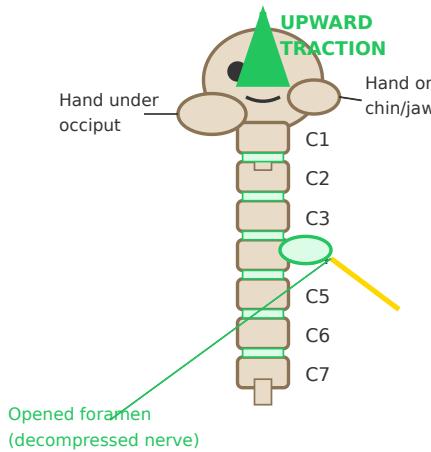
Technique: Supine; gently lift head to distract spine

Positive: Reduction of radicular symptoms

Accuracy: Sens 44%, Spec 90%

FIGURE 7: Cervical Distraction Test Illustration

Cervical Distraction Test Illustration



Test Position

- Patient seated or supine
- One hand under occiput
- Other hand on chin/jaw

Positive Test

Relief of radicular symptoms with upward traction

Clinical Significance

Suggests cervical nerve root compression

MECHANISM

Distraction opens intervertebral foramina, reducing nerve root compression

Illustration showing therapist performing cervical distraction test. One hand supports the occiput while the other hand controls the chin/jaw. Upward traction opens intervertebral foramina, reducing nerve root compression and relieving radicular symptoms.

Vertebral Artery Test

Purpose: Screen before manipulation

Technique: Supine; passively extend, rotate, side-bend; hold 10-30 seconds

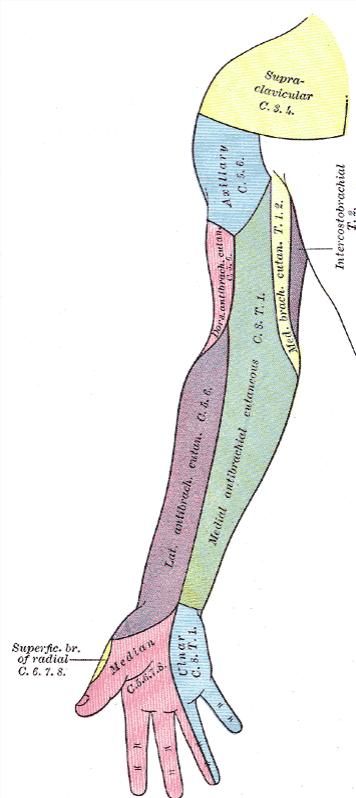
Positive: Nystagmus, dizziness, nausea, visual changes, dysarthria

Note: Poor sensitivity but standard precaution

2.4 Cervical Radiculopathy by Level

Level	Motor	Sensory	Reflex
C5	Shoulder abd, elbow flex	Lateral arm	Biceps
C6	Wrist ext, elbow flex	Lateral forearm, thumb	Brachioradialis
C7	Elbow ext, wrist flex	Posterior arm, middle finger	Triceps
C8	Finger flex, hand intrinsics	Ulnar forearm, little finger	None
T1	Hand intrinsics	Medial arm	None

FIGURE 8: Upper Extremity Dermatomes (C5-T1)



Gray's Anatomy Plate 812: Segmental distribution of the cutaneous nerves of the right upper extremity, anterior view. Public domain image from Gray's Anatomy, 20th edition (1918). Shows dermatomal distribution of C5-T1 nerve roots.

Module 3: Thoracic Spine (15 minutes)

3.1 Anatomy

FIGURE 9: Thoracic Spine Anatomy — Gray's Anatomy Plates (1918)

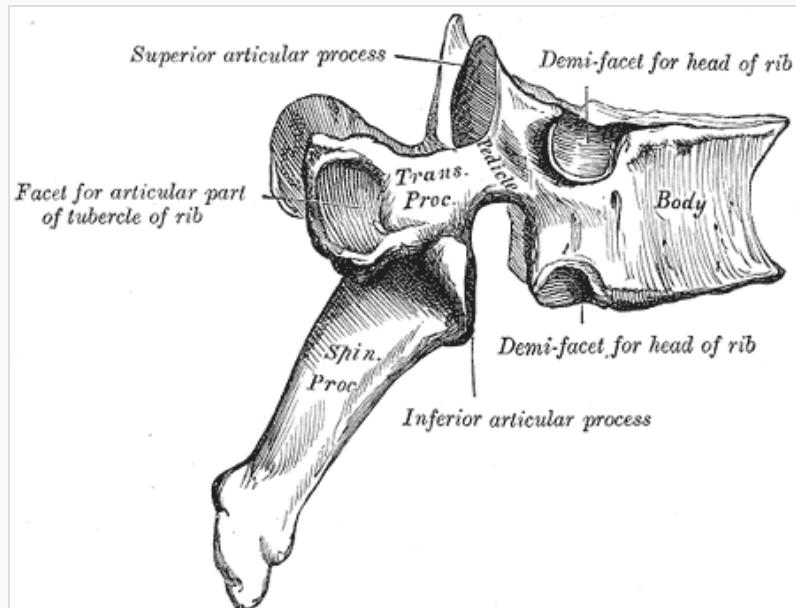


Plate 90: Thoracic vertebra

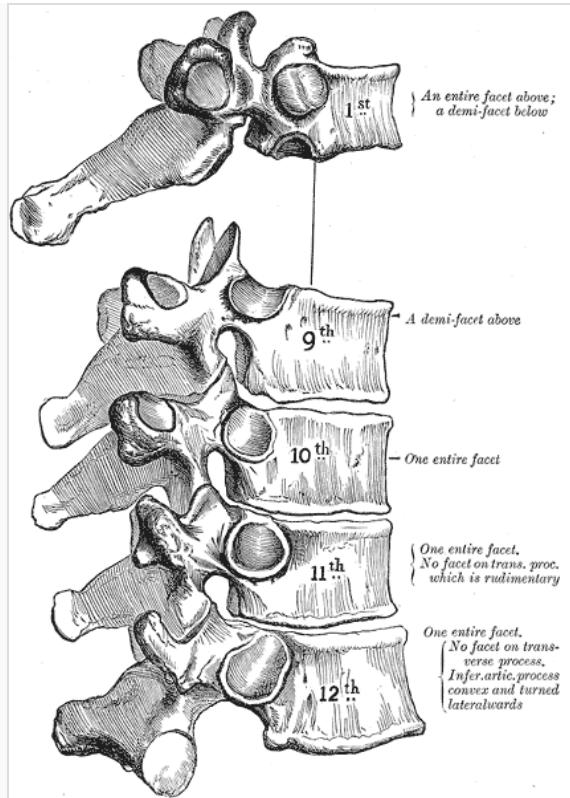


Plate 91: Peculiar thoracic vertebrae

Classic anatomical illustrations from Henry Gray's Anatomy of the Human Body, 20th edition (1918). Plate 90: Typical thoracic vertebra with costal facets; Plate 91: Comparative view showing variations at different thoracic levels (T1 transitional, T10-T12 lumbar-like characteristics). Public domain.

- Rib articulations T1-T12
- Kyphosis 20-45 degrees normal
- Facet joints frontal plane = more rotation, less flex/ext
- Narrowest spinal canal region

3.2 Thoracic ROM

Movement	Range
Flexion	20-45

Extension	15-25
Side bend	20-40 each
Rotation	30-35 each (greatest in spine)

3.3 Special Tests

Thoracic Rotation Test

Purpose: Assess thoracic mobility

Technique: Seated, arms crossed; rotate trunk while stabilizing pelvis

Significance: Restriction indicates hypomobility

First Rib Mobility Test

Purpose: Assess first rib hypomobility (common in TOS)

Technique: Supine; palpate first rib anterolateral to T1; assess mobility with respiration

Thoracic Differential Diagnosis: Thoracic pain can mimic cardiac, pulmonary, GI pathology. Screen for chest pressure, SOB, nausea, fever.

Module 4: Lumbar Spine (20 minutes)

4.1 Anatomy

FIGURE 10: Lumbar Spine Anatomy — Gray's Anatomy Plates (1918)

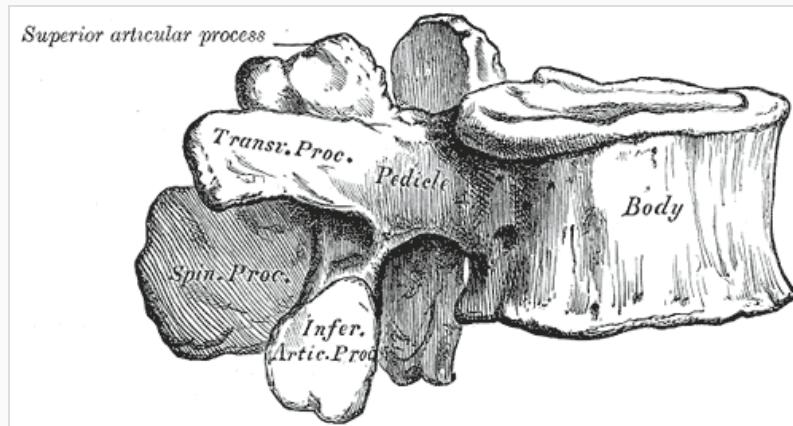


Plate 92: Lumbar vertebra from the side

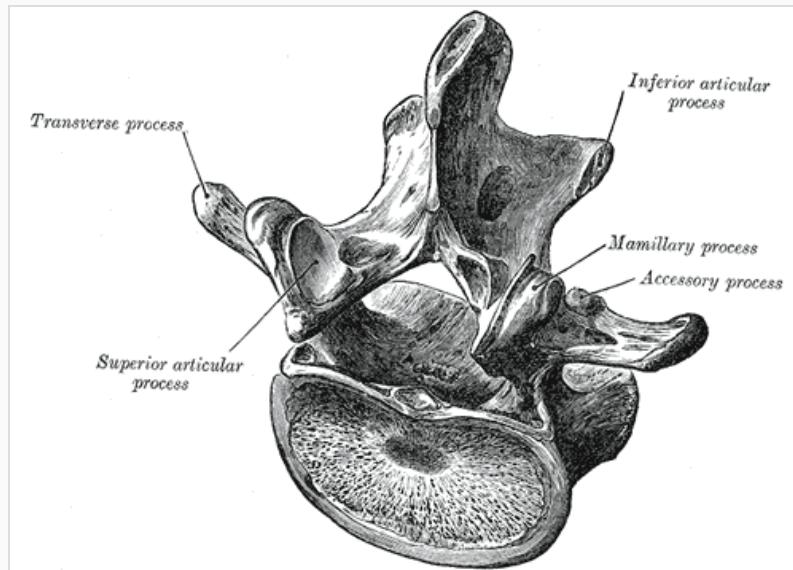


Plate 93: Lumbar vertebra from above and behind

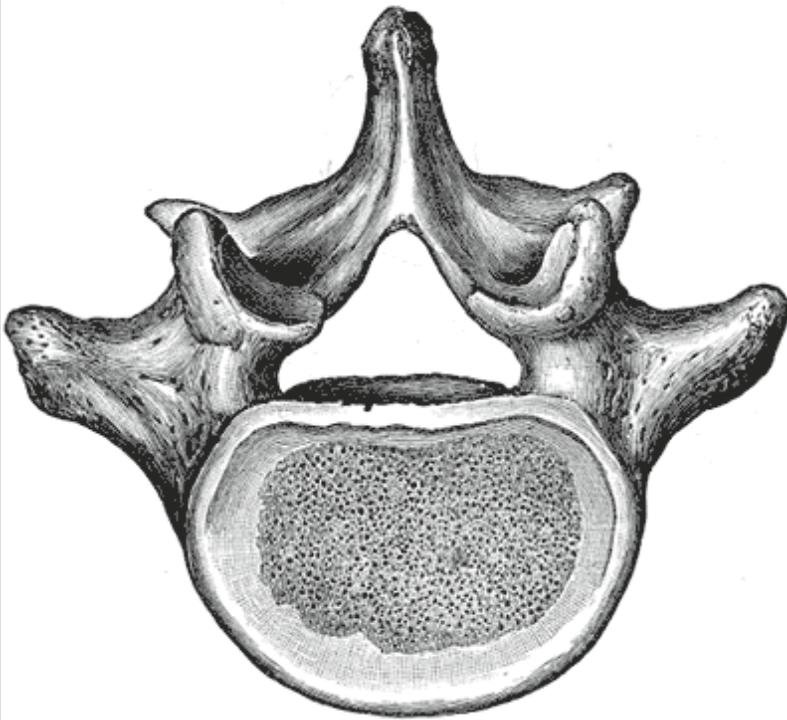


Plate 94: Lumbar vertebra from above

Gray's Anatomy (1918) plates showing lumbar vertebra anatomy. Plate 92 (lateral view) demonstrates the massive kidney-shaped vertebral body designed for weight bearing, long spinous process, and thick transverse processes. Plate 93 (superior-posterior oblique) shows the vertebral arch structures: thick pedicles, broad laminae, and triangular vertebral foramen. Plate 94 (superior view) reveals the large central canal accommodating the cauda equina and the medially-facing superior articular facets. Source: Gray's Anatomy, 20th ed. (1918), illustrated by Henry Vandyke Carter. Public domain.

- Five vertebrae (L1-L5)
- Large vertebral bodies for weight bearing
- Thickest discs in spine (1/3 of lumbar height)
- Facet joints sagittal plane = flex/ext, limited rotation

4.2 Lumbar Nerve Roots

Level	Motor	Sensory	Reflex
L3	Knee extension	Medial knee	Patellar
L4	Ankle dorsiflexion	Medial leg/foot	Patellar
L5	Great toe extension, hip abd	Lateral leg, dorsum foot	Medial hamstring
S1	Ankle plantarflexion, hip ext	Lateral foot, sole	Achilles

FIGURE 11: Lumbosacral Plexus and Dermatomes — Gray's Anatomy Plates (1918)

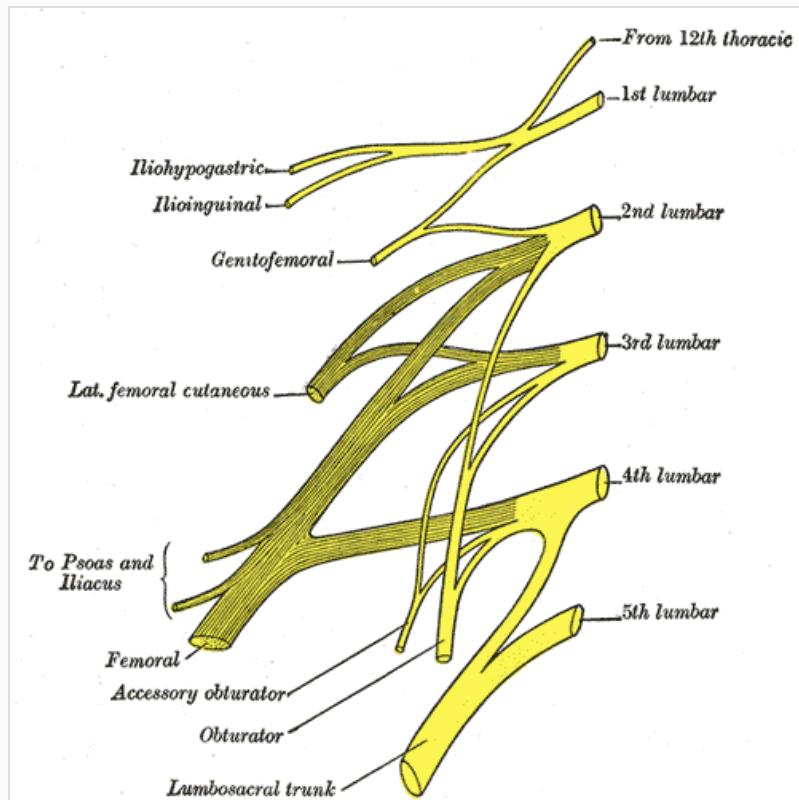


Plate 822: Plan of Lumbar Plexus

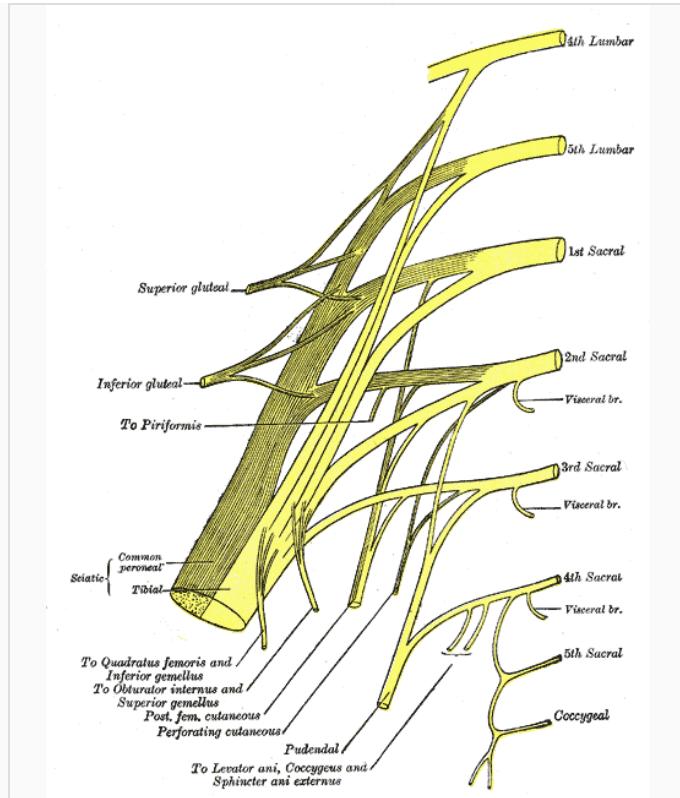


Plate 828: Plan of Sacral and Pudendal Plexuses

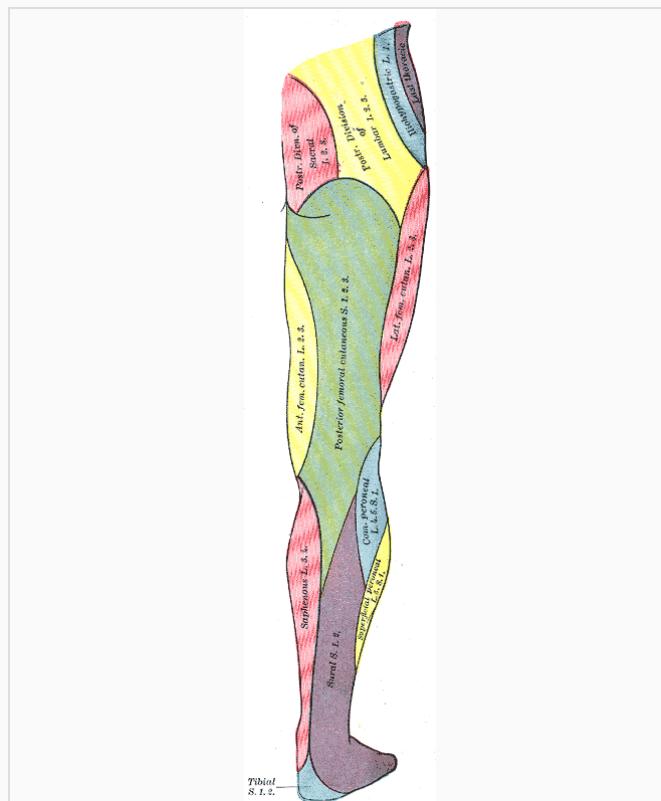


Plate 831: Cutaneous Nerves — Posterior View

Gray's Anatomy (1918) plates showing the lumbosacral nervous system. Plate 822 illustrates the lumbar plexus formation from L1-L4 roots with branches: iliohypogastric, ilioinguinal, genitofemoral, lateral femoral cutaneous, femoral, and obturator nerves. Plate 828 shows the sacral plexus (L4-S4) giving rise to superior/inferior gluteal nerves, posterior femoral cutaneous nerve, sciatic nerve (tibial and common peroneal divisions), and pudendal nerve. Plate 831 displays the segmental dermatome distribution of the posterior lower extremity. Source: Gray's Anatomy, 20th ed. (1918), illustrated by Henry Vandyke Carter. Public domain.

4.3 Special Tests

Straight Leg Raise (SLR)

Purpose: Lumbar radiculopathy, nerve root tension

Technique: Supine; passively lift extended leg by ankle

Positive: Radicular pain 30-70 degrees

Accuracy: Sens 91%, Spec 26% (highly sensitive, poorly specific)

Crossed SLR (raise unaffected leg produces symptoms): Sens 29%, Spec 88% (highly specific)

FIGURE 12: Straight Leg Raise Test

STRAIGHT LEG RAISE (SLR) TEST

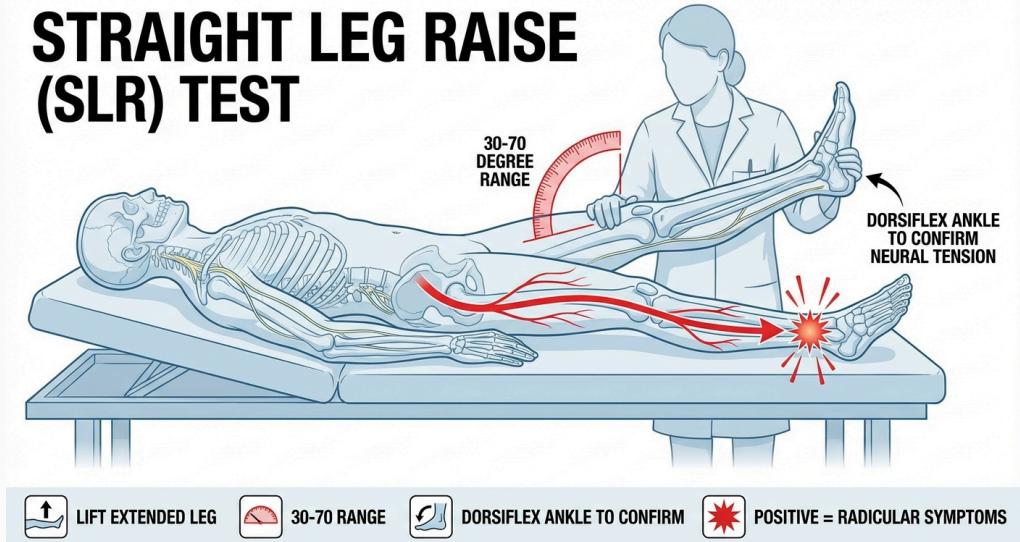


Illustration showing supine patient with examiner performing straight leg raise test. Patient's leg is lifted with knee extended while examiner monitors for radicular symptoms. Include angle indicator showing 30-70 degree range where positive findings typically occur. Show both standard SLR and crossed SLR variations.

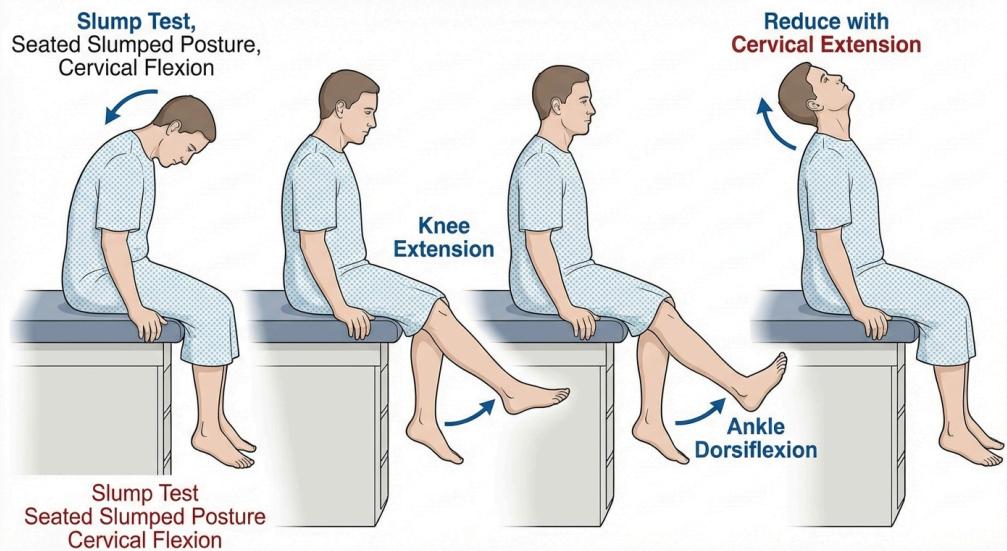
Slump Test

Purpose: Neural tension (more sensitive for central disc)

Technique: Seated slump with progressive cervical flexion, knee extension, ankle dorsiflexion

Positive: Symptom reproduction; relieved with cervical extension

FIGURE 13: Slump Test Demonstration



Sequential illustrations showing the slump test progression: (1) seated neutral, (2) thoracic/lumbar flexion (slump), (3) cervical flexion, (4) knee extension, (5) ankle dorsiflexion. Include the sensitizing maneuver of cervical extension to relieve symptoms, confirming neural tension as the pain source.

Prone Instability Test

Purpose: Identify patients who may benefit from stabilization

Technique: Prone; passive extension to pain; then patient lifts legs activating stabilizers

Positive: Pain reduces with muscle activation

4.4 Low Back Pain Classification

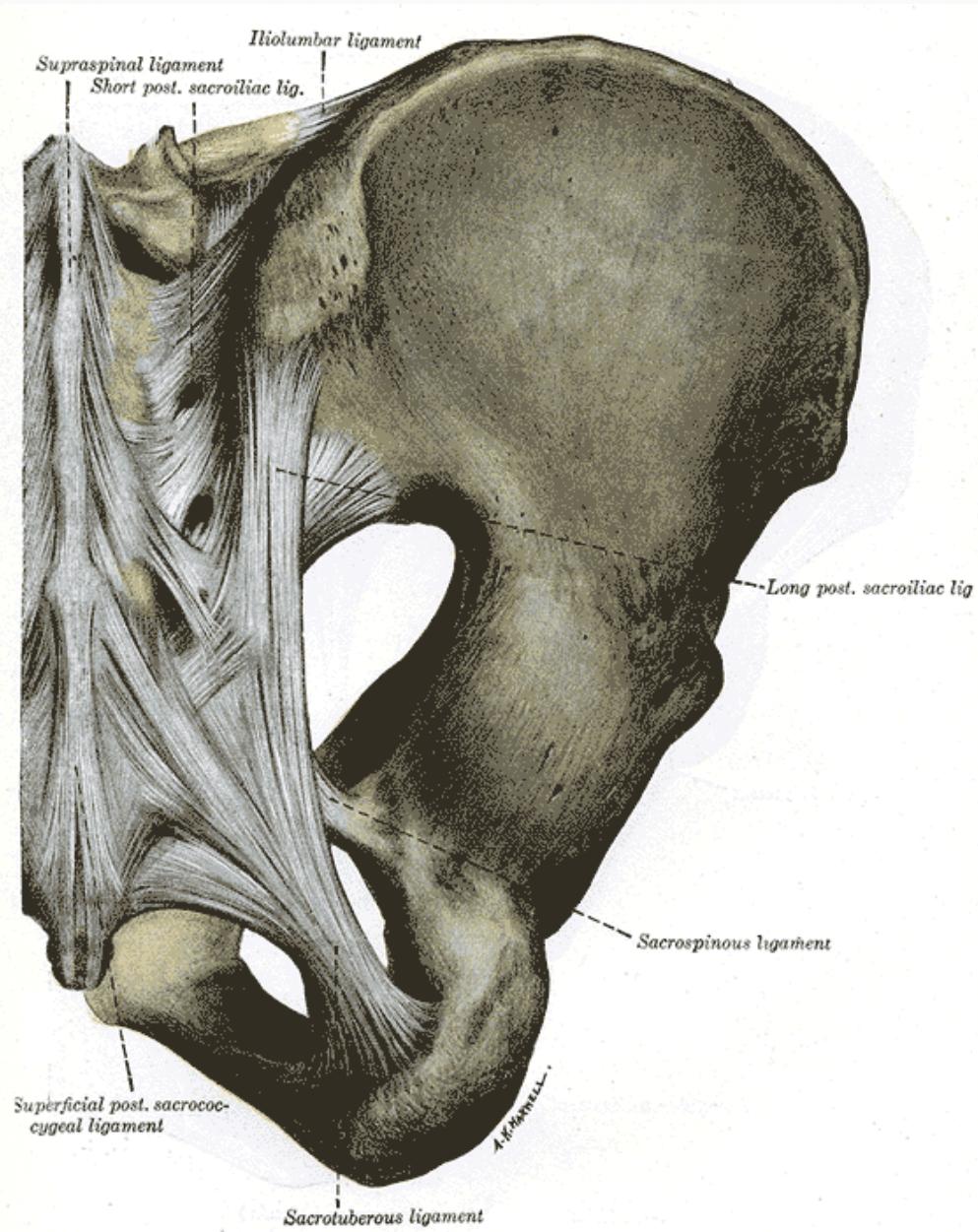
Category	Percentage
Nonspecific mechanical	85-90%
Radiculopathy (sciatica)	5-10%

Serious pathology	1-2%
Inflammatory	<1%

Module 5: Sacroiliac Joint (12 minutes)

5.1 Anatomy

FIGURE 14: Sacroiliac Joint Anatomy



Posterior view of the pelvic articulations. Gray's Anatomy Plate 320 (public domain). This illustration depicts the sacroiliac joints from the posterior aspect, showing the strong posterior ligamentous complex including the interosseous and posterior sacroiliac ligaments, sacrotuberous ligament, and sacrospinous ligament.

- Articular surfaces: auricular (ear-shaped)
- Minimal movement (2-3 degrees rotation, 1-2mm translation)
- Strong ligamentous support
- Transmits forces between spine and lower extremities

5.2 Special Tests

FABER Test (Patrick's Test)

Purpose: Differentiate hip vs SI joint pathology

Technique: Supine; foot on opposite knee (figure-4), stabilize contralateral ASIS, apply downward pressure

Interpretation: Groin pain = hip; posterior pain = SI joint

Gaenslen's Test

Purpose: SI joint stress test

Technique: Supine at table edge; one leg off table extended, opposite hip flexed to chest

Positive: SI pain on extended side

Thigh Thrust (Femoral Shear)

Purpose: SI joint dysfunction

Technique: Supine; hip flexed 90, examiner applies posterior shear through femur

Positive: Posterior SI pain

Sacroiliac Compression Test

Purpose: SI joint pathology

Technique: Side-lying; examiner applies downward pressure through pelvis

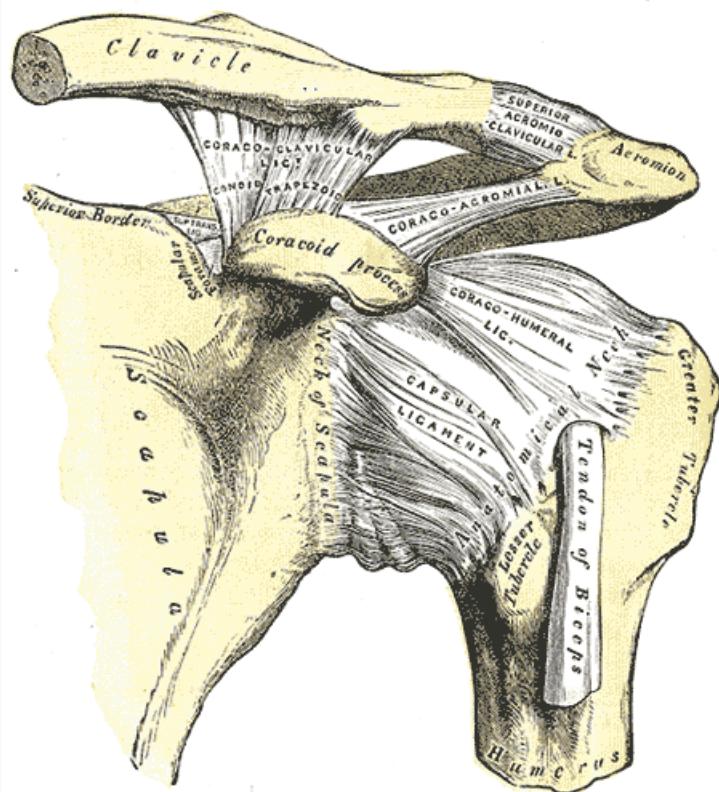
Positive: SI joint pain

SI Joint Cluster: Three or more positive tests increases likelihood of SI joint dysfunction (Sens 94%, Spec 78%).

Module 6: Shoulder (20 minutes)

6.1 Anatomy

FIGURE 15: Shoulder Complex Anatomy



Gray's Anatomy Plate 326 (public domain). Illustration showing the left shoulder and acromioclavicular joints with proper ligaments of the scapula.

Key structures visible: glenohumeral joint, acromioclavicular (AC) joint articulation, coracoacromial ligament, coracoclavicular ligaments (trapezoid and conoid), superior transverse scapular ligament, and scapular anatomy.

Four Joints of Shoulder Complex

- **Glenohumeral:** Primary shoulder joint; ball and socket

- **Acromioclavicular (AC):** Connects clavicle to scapula
- **Sternoclavicular (SC):** Only axial skeleton attachment
- **Scapulothoracic:** Not true joint; movement on rib cage

Rotator Cuff

- **SITS muscles:** Supraspinatus, Infraspinatus, Teres minor, Subscapularis
- Function: Dynamic stabilization and humeral head centering

6.2 Shoulder ROM

Movement	Normal	Functional
Flexion	0-180	140-160
Extension	0-60	45
Abduction	0-180	120
Internal rotation	0-70	50 (toileting)
External rotation	0-90	60-70

6.3 Special Tests

Neer Impingement Test

Purpose: Subacromial impingement

Technique: Stabilize scapula; forcibly elevate arm in forward flexion with internal rotation

Positive: Pain in 60-120 arc

Accuracy: Sens 79%, Spec 53%

Hawkins-Kennedy Test

Purpose: Subacromial impingement

Technique: Arm at 90 flexion; examiner applies internal rotation

Positive: Pain with IR

Accuracy: Sens 79%, Spec 59%

Cluster: Neer + Hawkins increases accuracy

Empty Can Test (Jobe Test)

Purpose: Supraspinatus pathology

Technique: Arms abducted 90 in scapular plane (30 forward), thumbs down (internal rotation), resist downward pressure

Positive: Weakness or pain

Accuracy: Sens 86%, Spec 50%

Drop Arm Test

Purpose: Full-thickness rotator cuff tear

Technique: Patient actively abducts to 90; examiner releases support

Positive: Arm drops (cannot maintain position)

Accuracy: Sens 20-50%, Spec 90%+ (highly specific)

Apprehension Test

Purpose: Anterior shoulder instability

Technique: Supine; arm abducted 90, slowly externally rotate while observing for apprehension

Positive: Patient apprehension, guarding, or reports feeling of dislocation

Accuracy: Sens 68-92%, Spec 89-100%

FIGURE 16: Empty Can Test (Jobe Test)

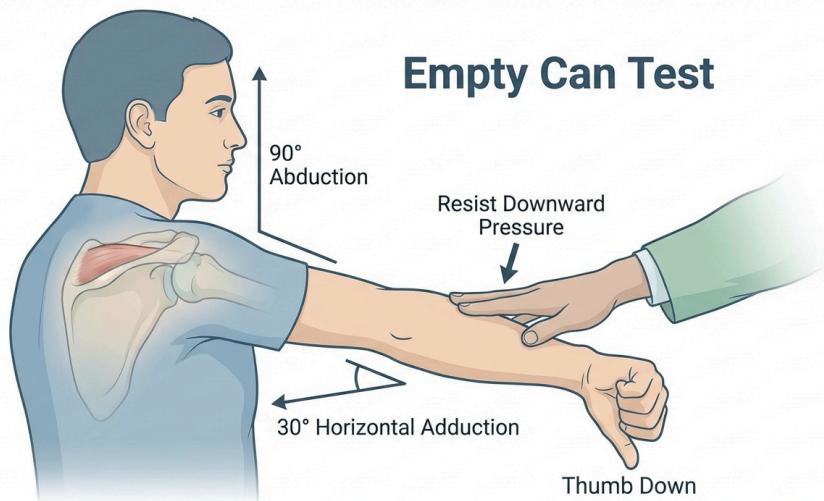


Illustration showing the empty can test position. Patient's arms abducted to 90 degrees in the scapular plane (30 degrees forward of the frontal plane), with shoulders internally rotated (thumbs pointing down as if emptying a can). Examiner applies downward pressure while patient resists. Weakness or pain indicates supraspinatus pathology. Also known as the Jobe test for rotator cuff assessment.

FIGURE 17: Shoulder Apprehension Test



Apprehension Test, 90° Abduction,
90° Elbow Flexion, External Rotation

Apprehension Test, 90° Abduction,
90° Elbow Flexion, External Rotation

Illustration showing the shoulder apprehension test for anterior instability. Patient positioned supine with shoulder abducted to 90 degrees and elbow flexed to 90 degrees. Examiner slowly externally rotates the shoulder while monitoring for signs of apprehension (facial expression, guarding, verbal report of feeling like the shoulder will dislocate). The test places the humeral head in a position of potential anterior subluxation.

Relocation Test

Purpose: Confirm anterior instability (follows positive apprehension)

Technique: Apply posterior glide pressure to humeral head during apprehension position

Positive: Relief of apprehension

Speed's Test

Purpose: Biceps tendon pathology

Technique: Arm flexed 60-90, forearm supinated, elbow extended; resist forward flexion

Positive: Anterior shoulder pain

Accuracy: Sens 32%, Spec 75%

O'Brien's Test

Purpose: SLAP lesion, AC joint pathology

Technique: Arm flexed 90, adducted 15, thumb down; resist downward pressure; repeat palm up

Positive: Pain thumb down, reduced palm up suggests SLAP; pain both positions suggests AC joint

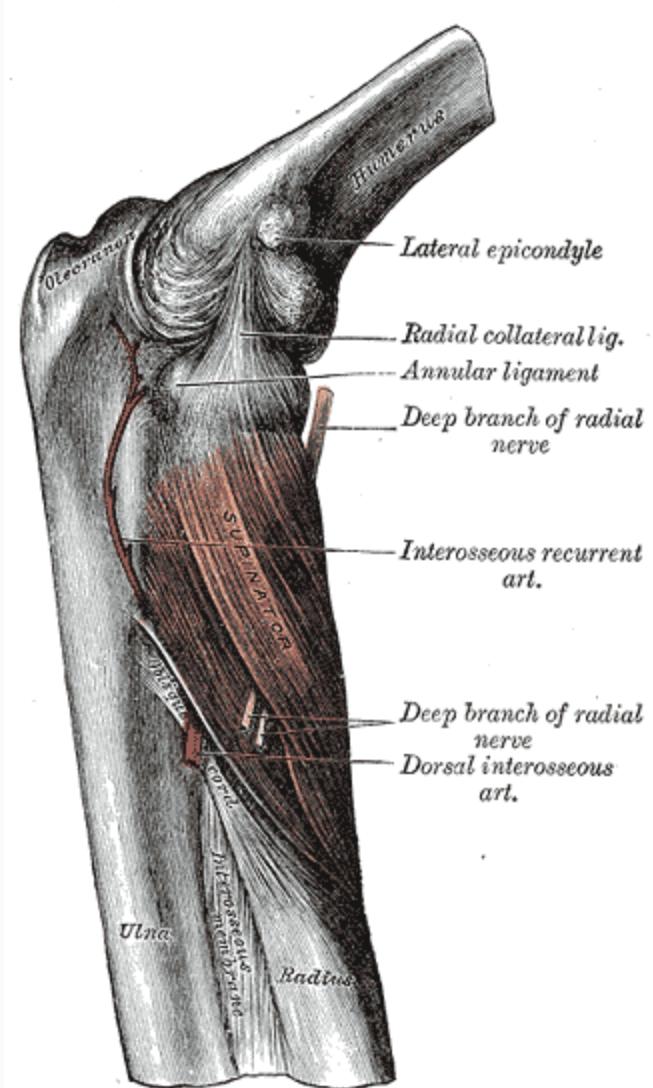
6.4 Impingement vs Instability

Feature	Impingement	Instability
Age	40+	15-30
Onset	Gradual	Traumatic or recurrent
Pain location	Lateral arm	Anterior, feeling of slipping
Key tests	Neer, Hawkins positive	Apprehension positive
Treatment	Rotator cuff strengthening	Capsular stabilization

Module 7: Elbow (12 minutes)

7.1 Anatomy

FIGURE 18: Elbow Joint Anatomy



Gray's Anatomy, Plate 420 (public domain, 1918). Bones of the left upper extremity showing the elbow joint articulations: humeroulnar, humeroradial, and proximal radioulnar joints. Anterior view demonstrating

the trochlea, capitulum, medial and lateral epicondyles, olecranon, and radial head.

- **Humeroulnar:** Hinge joint for flexion/extension
- **Humeroradial:** Flexion/extension and forearm rotation
- **Proximal radioulnar:** Forearm pronation/supination
- **Valgus stabilizers:** UCL (anterior bundle primary)

7.2 Elbow ROM

Movement	Normal	Functional
Flexion	0-150	30-130 (ADL)
Pronation	0-80	50
Supination	0-80	50

7.3 Special Tests

Cozen Test

Purpose: Lateral epicondylitis (tennis elbow)

Technique: Elbow extended, forearm pronated, wrist extended; resist wrist extension

Positive: Lateral elbow pain

Mill's Test

Purpose: Lateral epicondylitis

Technique: Elbow extended, forearm pronated, wrist flexed,

ulnar deviated; passively stretch

Positive: Lateral elbow pain

Maudsley's Test

Purpose: Lateral epicondylitis

Technique: Resist extension of middle finger

Positive: Lateral elbow pain at common extensor origin

Medial Epicondylitis Test

Purpose: Golfer's elbow

Technique: Elbow extended, forearm supinated; resist wrist flexion and forearm pronation

Positive: Medial elbow pain

Valgus Stress Test

Purpose: UCL integrity (thrower's elbow)

Technique: Elbow flexed 20-30; stabilize humerus, apply valgus force at elbow

Positive: Pain or laxity at medial elbow

Note: Compare to uninvolved side; assess end-feel

Tinel's Test (Elbow)

Purpose: Ulnar nerve compression (cubital tunnel)

Technique: Tap ulnar nerve in groove posterior to medial epicondyle

Positive: Tingling/paresthesia in ulnar distribution

Elbow Flexion Test

Purpose: Cubital tunnel syndrome

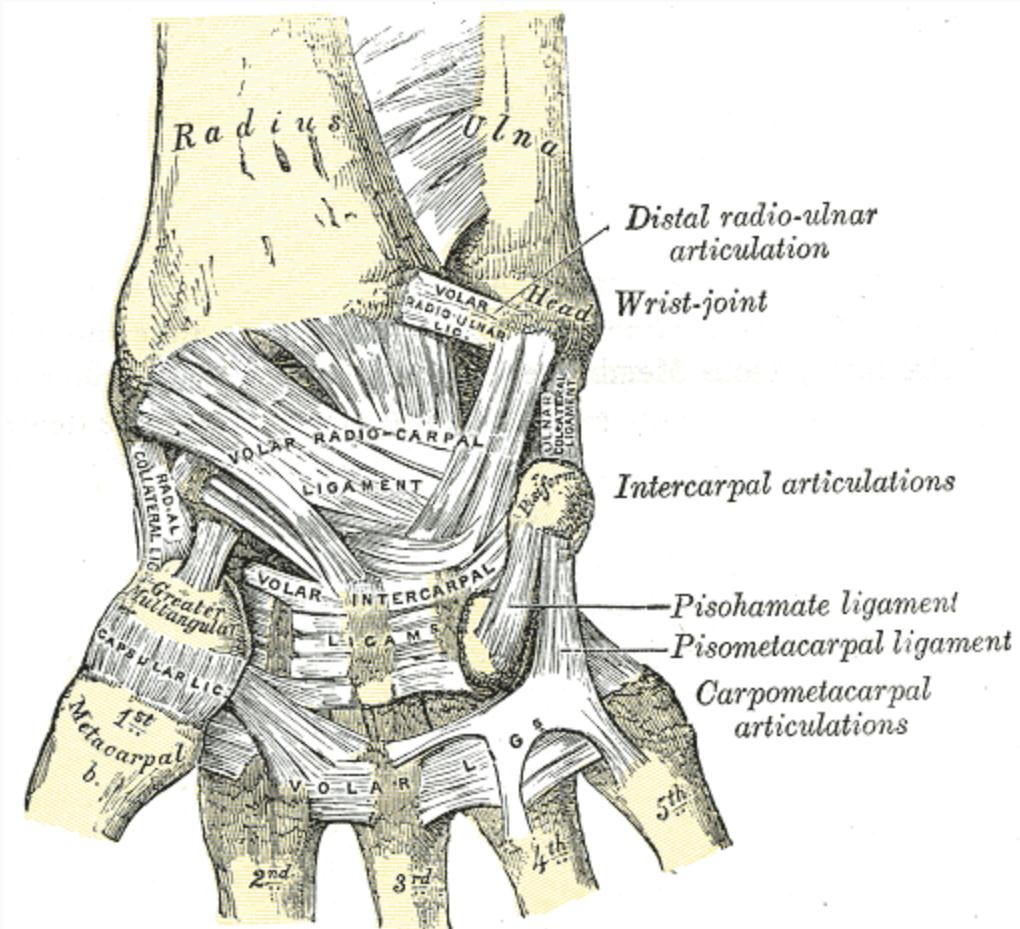
Technique: Hold elbow in maximal flexion with wrist extended for 1 minute

Positive: Reproduction of ulnar nerve symptoms

Module 8: Wrist and Hand (12 minutes)

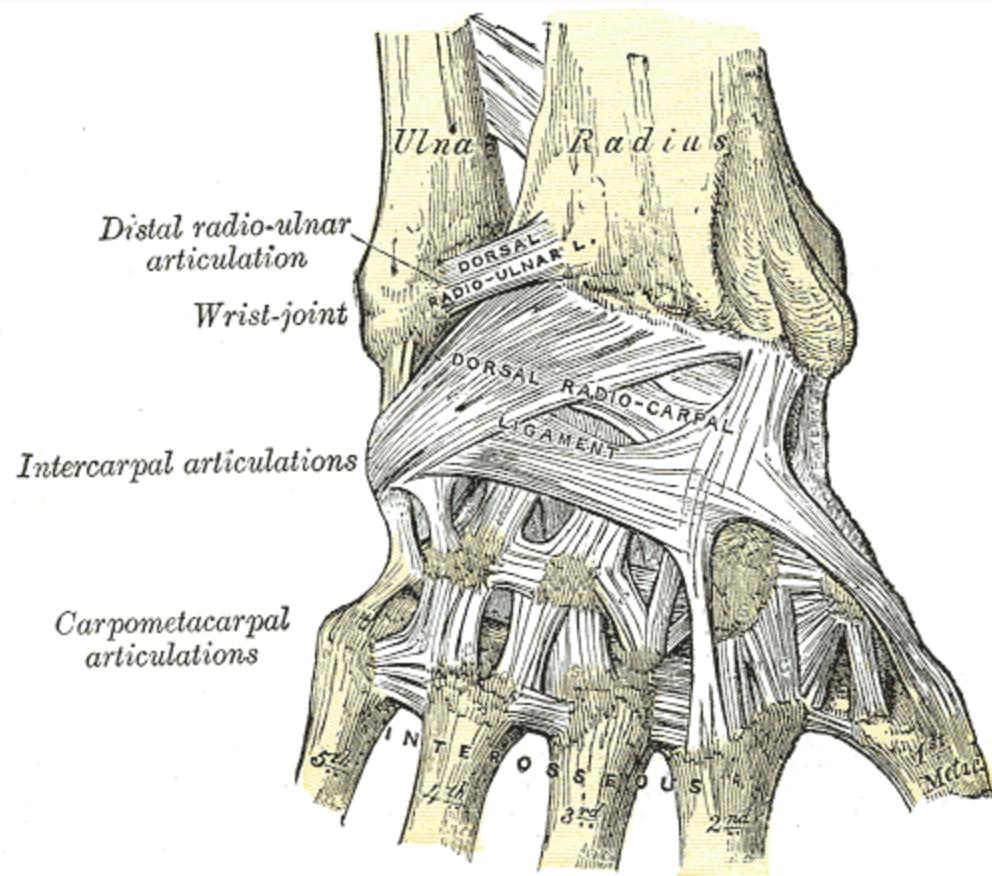
8.1 Anatomy

FIGURE 19: Wrist Ligaments - Anterior View



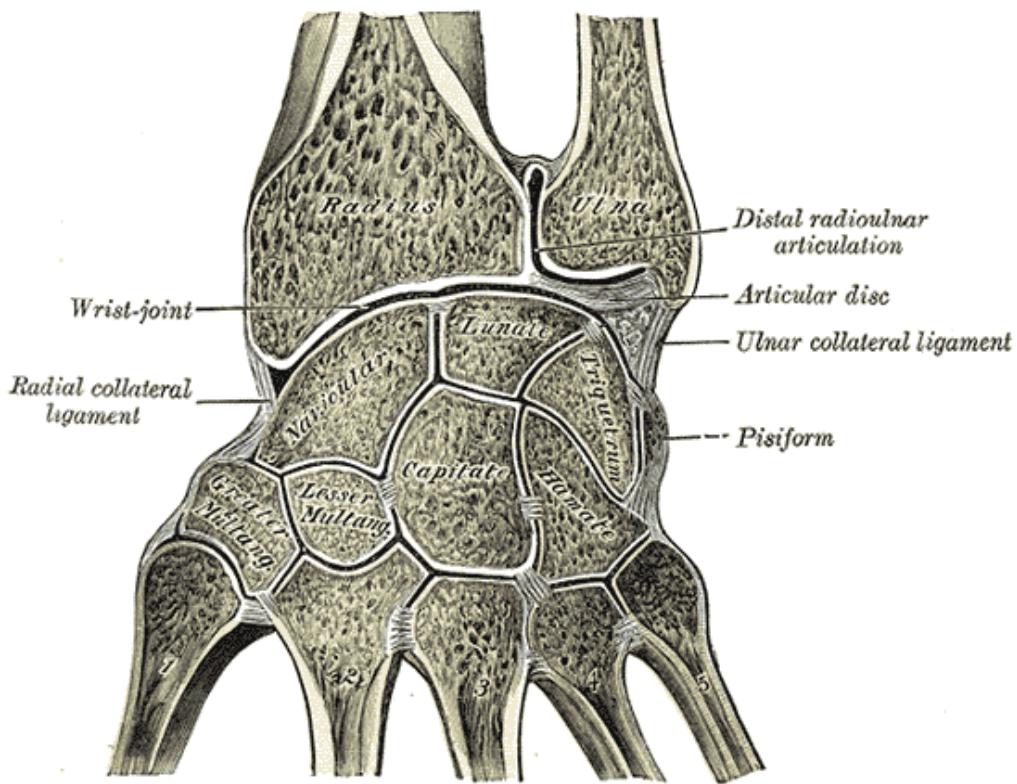
Gray's Anatomy, Plate 334 (public domain, 1918). Ligaments of wrist, anterior (palmar) view. Shows the radiocarpal ligaments, ulnar collateral ligament, radial collateral ligament, and transverse carpal ligament forming the roof of the carpal tunnel. Essential anatomy for understanding wrist stability and carpal tunnel syndrome.

FIGURE 19b: Wrist Ligaments - Posterior View



Gray's Anatomy, Plate 335 (public domain, 1918). Ligaments of wrist, posterior (dorsal) view. Shows the dorsal radiocarpal ligaments and intercarpal ligaments providing stability to the wrist joint from the back.

FIGURE 19c: Wrist Articulations



Gray's Anatomy, Plate 336 (public domain, 1918). Articulations of the wrist joint showing the relationships between the radius, ulna, and carpal bones. Demonstrates the complex articulations that allow wrist flexion, extension, abduction, and adduction.

- **Radiocarpal joint:** Radius, scaphoid, lunate, triquetrum
- **Midcarpal joint:** Between proximal and distal carpal rows
- **TFCC:** Triangular fibrocartilage complex; ulnar wrist stability
- **Carpal tunnel:** Median nerve under transverse carpal ligament

8.2 Wrist ROM

Movement	Normal
----------	--------

Flexion	0-80
Extension	0-70
Radial deviation	0-20
Ulnar deviation	0-30

8.3 Special Tests

Finkelstein Test

Purpose: De Quervain's tenosynovitis

Technique: Thumb tucked in fist, ulnar deviate wrist

Positive: Pain over radial styloid

Note: Differentiate from CMC arthritis (grind test)

Phalen's Test

Purpose: Carpal tunnel syndrome

Technique: Hold wrists in complete flexion for 60 seconds

Positive: Paresthesia in median nerve distribution (thumb, index, middle, radial half ring)

Accuracy: Sens 68%, Spec 73%

Tinel's Test (Wrist)

Purpose: Carpal tunnel syndrome

Technique: Tap over carpal tunnel at wrist crease

Positive: Paresthesia in median distribution

Accuracy: Sens 50%, Spec 77%

Carpal Compression Test

Purpose: Carpal tunnel syndrome

Technique: Apply sustained pressure over carpal tunnel with thumb

Positive: Reproduction of symptoms within 30 seconds

Accuracy: Sens 87%, Spec 90%

Watson's Test (Scaphoid Shift)

Purpose: Scapholunate instability

Technique: Wrist in slight flexion; apply pressure to scaphoid tubercle while moving wrist from ulnar to radial deviation

Positive: Pain, clunk, or subluxation

TFCC Compression Test

Purpose: TFCC tear

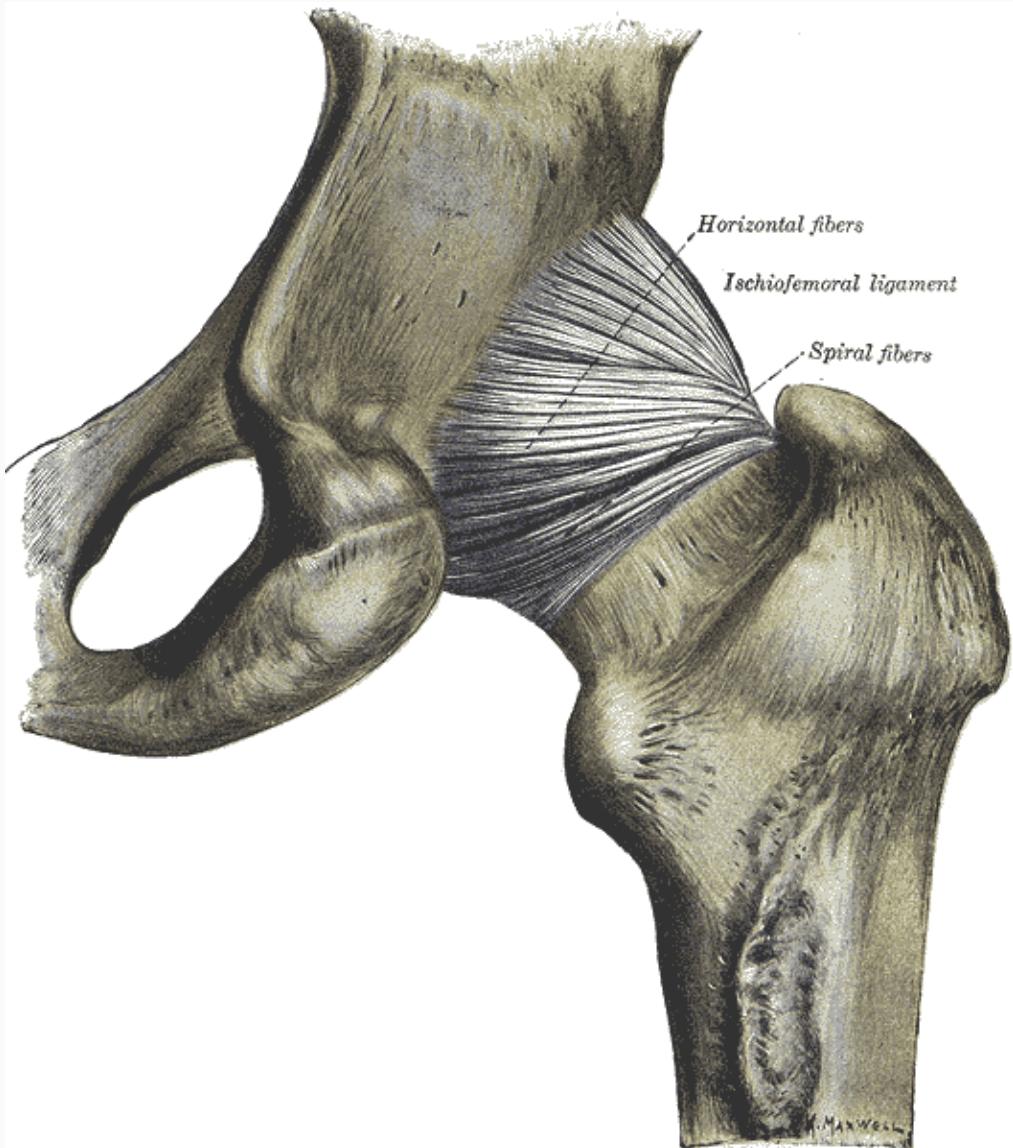
Technique: Axial load wrist with ulnar deviation

Positive: Ulnar wrist pain

Module 9: Hip (15 minutes)

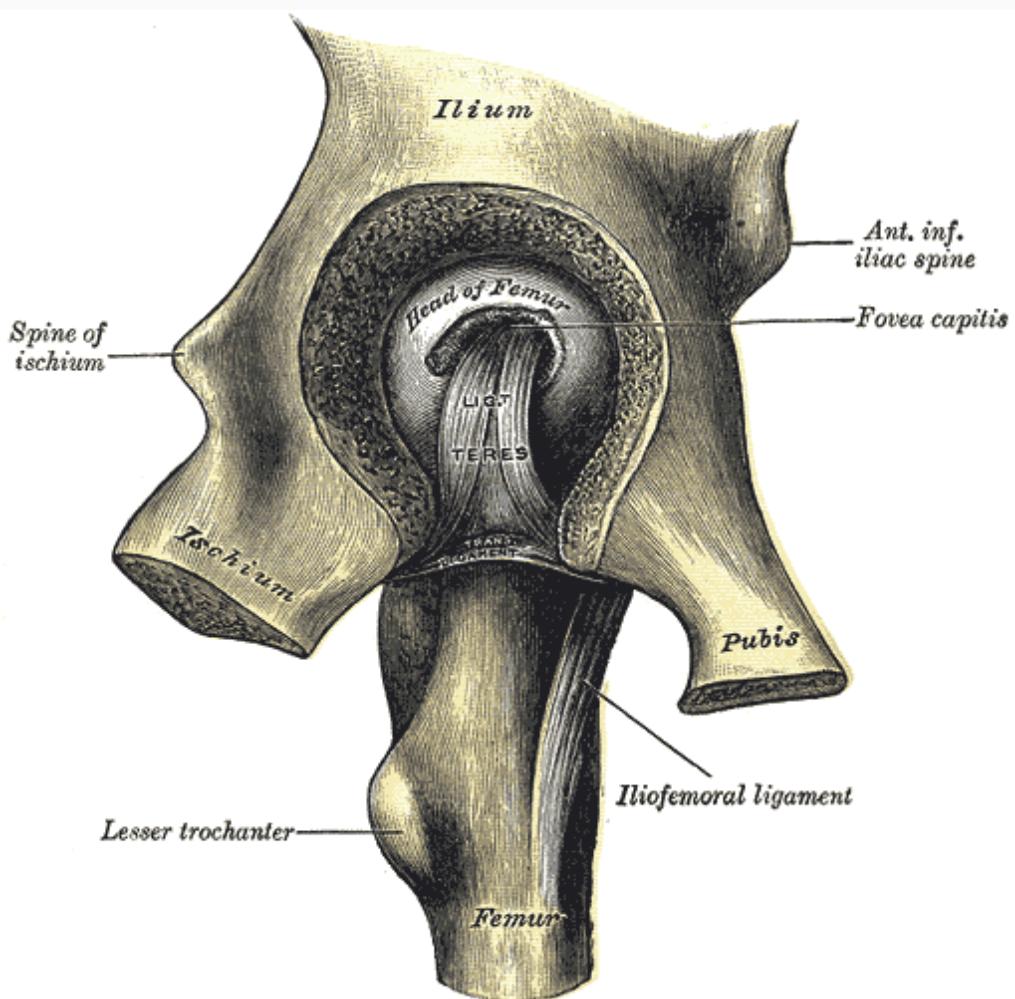
9.1 Anatomy

FIGURE 20: Hip Bone Anatomy



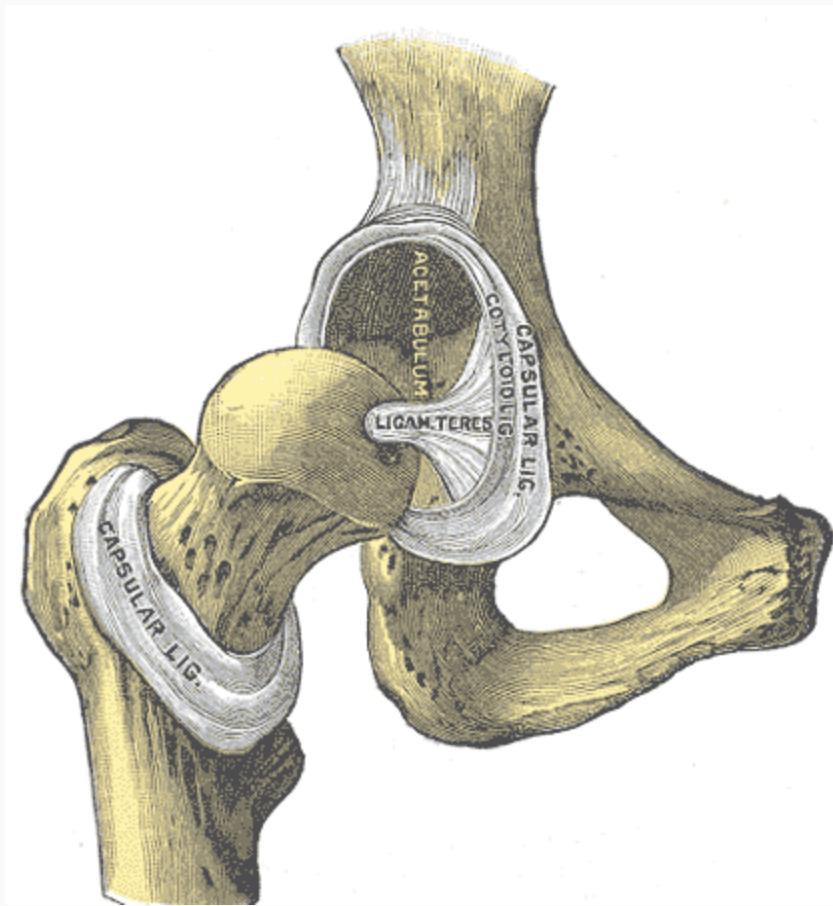
Gray's Anatomy, Plate 340 (public domain, 1918).

FIGURE 20b: Hip Bone Anatomy



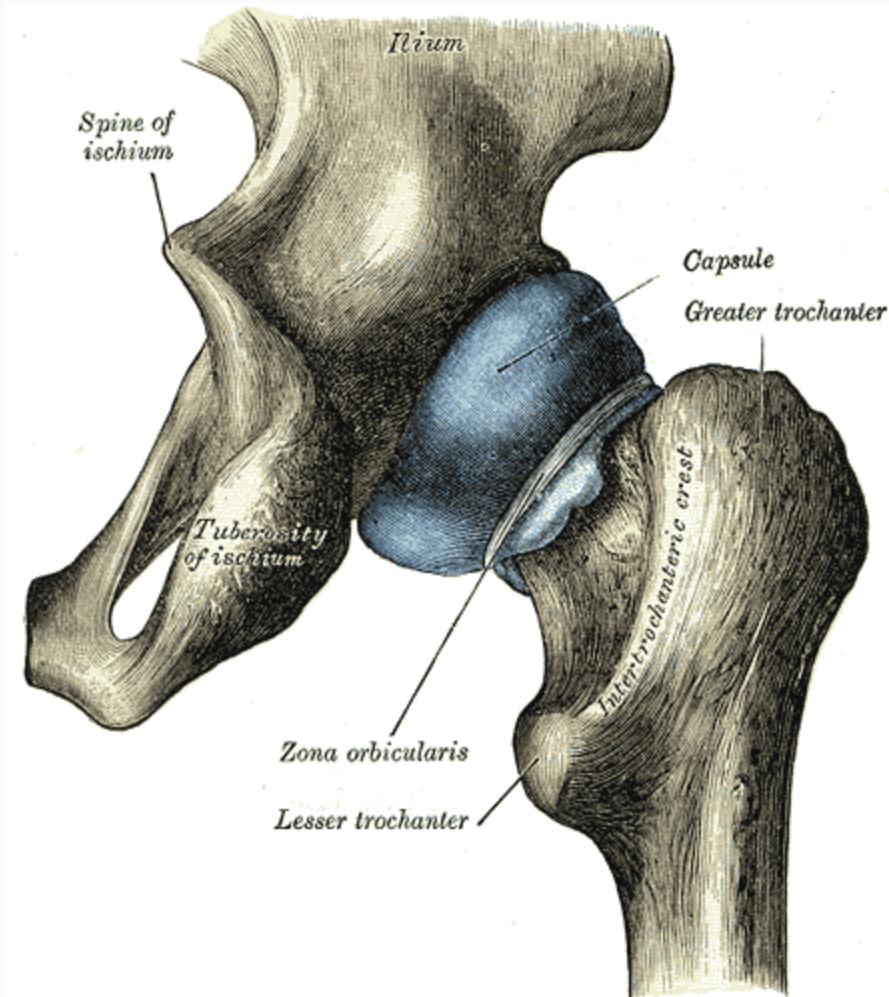
Gray's Anatomy, Plate 341 (public domain, 1918).

FIGURE 20c: Hip Bone Anatomy



Gray's Anatomy, Plate 342 (public domain, 1918).

FIGURE 20d: Hip Bone Anatomy



Gray's Anatomy, Plate 343 (public domain, 1918).

- **Ball and socket joint:** Femoral head in acetabulum
- **Acetabular labrum:** Fibrocartilaginous rim deepens socket
- **Hip capsule:** Strong; limits extension and rotation
- **Primary hip flexors:** Iliopsoas
- **Primary hip extensors:** Gluteus maximus, hamstrings
- **Primary hip abductors:** Gluteus medius, minimus
- **Primary hip external rotators:** Piriformis, gemelli, obturators

9.2 Hip ROM

Movement	Normal	Functional
Flexion	0-120	110
Extension	0-30	10-15
Abduction	0-45	30
Internal rotation	0-45	30
External rotation	0-45	30

9.3 Special Tests

FABER Test (Patrick's Test)

Purpose: Differentiate hip vs SI pathology

Technique: Supine; foot on opposite knee (figure-4), stabilize contralateral ASIS, apply downward pressure

Interpretation: Groin pain = hip pathology; posterior pain = SI joint

FADIR Test

Purpose: Hip impingement (femoroacetabular impingement - FAI)

Technique: Hip flexed to 90, adducted, internally rotated

Positive: Anterior groin pain

Note: Highly sensitive for FAI screening (Sens 94-99%)

Thomas Test

Purpose: Hip flexor tightness

Technique: Supine; flex one hip to chest while observing opposite leg

Positive: Opposite hip flexes off table (tight iliopsoas) or knee flexes (tight rectus femoris) or hip abducts (tight TFL/IT band)

Ober Test

Purpose: IT band/TFL tightness

Technique: Side-lying; lower leg flexed for stability; upper leg extended, abducted, then lowered toward table

Positive: Upper leg remains abducted, does not lower to table

Trendelenburg Test

Purpose: Gluteus medius weakness

Technique: Standing on one leg; observe pelvis

Positive: Contralateral pelvis drops (indicates stance hip abductor weakness)

Compensated: Patient leans over stance leg to maintain level pelvis

Piriformis Test (FAIR)

Purpose: Piriformis syndrome

Technique: Supine; hip flexed, adducted, internally rotated (stretches piriformis)

Positive: Posterior hip/buttock pain

Note: Piriformis can compress sciatic nerve, causing sciatica-like symptoms

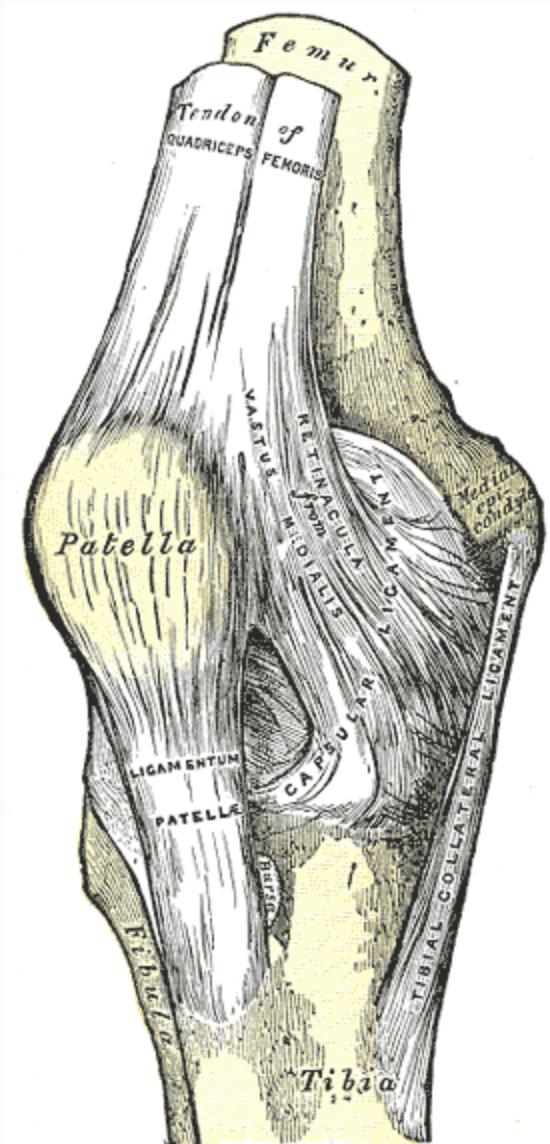
9.4 Hip Pathology Differential

Condition	Age	Pain Location	Key Finding
Hip osteoarthritis	50+	Groin, anterior thigh	Limited IR, positive FADIR
Labral tear/FAI	15-45	Anterior groin	Positive FADIR, catching/clicking
Trochanteric bursitis	40-60	Lateral hip	Tenderness over greater trochanter
Piriformis syndrome	Any	Posterior hip, sciatica	Positive FAIR, normal spine exam
Stress fracture	Athletes	Groin, anterior hip	Weight-bearing pain, hop test positive

Module 10: Knee (18 minutes)

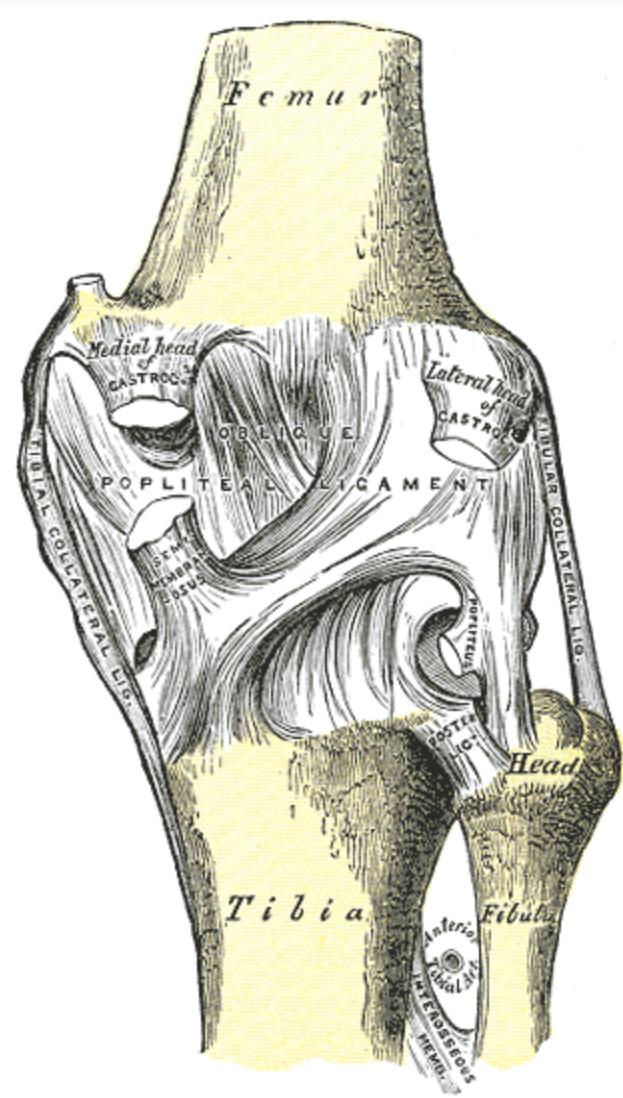
10.1 Anatomy

FIGURE 21: Knee Joint Anatomy



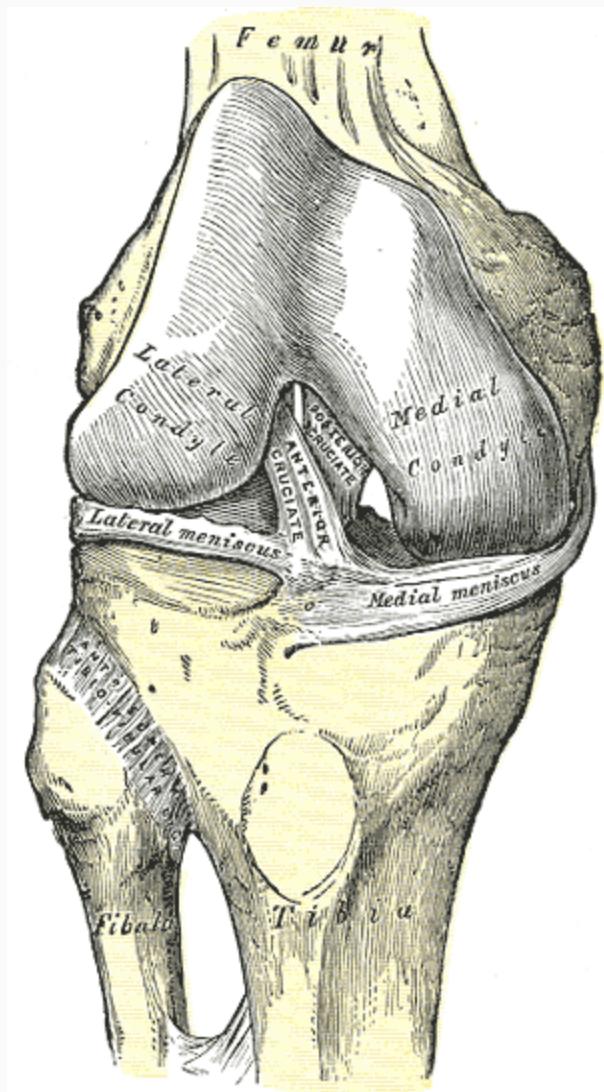
Gray's Anatomy, Plate 345 (public domain, 1918).

FIGURE 21b: Knee Joint Anatomy



Gray's Anatomy, Plate 346 (public domain, 1918).

FIGURE 21c: Knee Joint Anatomy



Gray's Anatomy, Plate 347 (public domain, 1918).

Bony Structures

- Femoral condyles (medial and lateral)
- Tibial plateau
- Patella (sesamoid bone in quadriceps tendon)
- Intercondylar eminence (tibial spines - ACL/PCL attachments)

Ligaments

- **ACL:** Prevents anterior tibial translation, rotational stability
- **PCL:** Prevents posterior tibial translation
- **MCL:** Prevents valgus stress; superficial and deep layers
- **LCL:** Prevents varus stress; cord-like structure

Menisci

- **Medial meniscus:** C-shaped, less mobile, attached to MCL and joint capsule (more commonly injured)
- **Lateral meniscus:** O-shaped, more mobile, fewer attachments
- **Function:** Shock absorption, load distribution, joint lubrication, secondary stabilization

10.2 Knee ROM

Movement	Normal	Functional
Flexion	0-135	90 (stairs), 120 (squat)
Extension	0 (full extension)	0 (needed for gait)
Internal rotation	0-10 (flexed)	5-10
External rotation	0-10 (flexed)	5-10

10.3 Special Tests - Ligaments

Lachman Test

Purpose: ACL integrity - gold standard

Technique: Knee flexed 20-30; stabilize femur, pull tibia

anteriorly

Positive: Excessive anterior translation or soft end-feel

Accuracy: Sens 85%, Spec 94%

Advantage: More sensitive than anterior drawer in acute injuries (less hamstring guarding)

Anterior Drawer Test

Purpose: ACL integrity

Technique: Knee flexed 90, foot stabilized; pull tibia anteriorly

Positive: Excessive anterior translation

Accuracy: Sens 48%, Spec 93%

Note: Less sensitive than Lachman in acute injuries due to hamstring guarding

Pivot Shift Test

Purpose: ACL deficiency with rotational instability

Technique: Knee extended, internally rotated; apply valgus force while flexing knee

Positive: Clunk/reducible subluxation at 20-40 flexion

Accuracy: Sens 35-81%, Spec 98% (highly specific)

Note: Difficult to perform on awake patient due to apprehension

Posterior Drawer Test

Purpose: PCL integrity

Technique: Knee flexed 90; push tibia posteriorly

Positive: Excessive posterior translation

Note: Grade I (0-5mm), II (5-10mm), III (>10mm - suggests PLC injury too)

Valgus Stress Test

Purpose: MCL integrity

Technique: Knee flexed 20-30 (isolates MCL from joint); apply valgus force

Positive: Pain or laxity

Note: Test at 0 extension (if positive, suggests cruciate involvement)

Varus Stress Test

Purpose: LCL integrity

Technique: Knee flexed 20-30; apply varus force

Positive: Pain or laxity

Note: Isolated LCL injuries less common than MCL

10.4 Special Tests - Meniscus

McMurray's Test

Purpose: Meniscal tear

Technique: Knee fully flexed; externally rotate and apply valgus while extending (tests medial); internally rotate and apply varus (tests lateral)

Positive: Click or pain at joint line

Accuracy: Sens 55%, Spec 77%

Note: Traditional test; newer tests more accurate

Thessaly Test

Purpose: Meniscal tear

Technique: Patient standing on involved leg, knee flexed 20, rotating body over fixed foot

Positive: Joint line pain or catching/locking sensation

Accuracy: Sens 90%, Spec 97% (more accurate than McMurray)

Note: Weight-bearing test; caution with acute injuries

Apley's Compression Test

Purpose: Meniscal tear

Technique: Prone; knee flexed 90; apply downward compression while rotating tibia

Positive: Joint line pain

Note: Distraction relieves pain (distinguishes from ligament injury)

Joint Line Tenderness

Purpose: Meniscal tear

Technique: Palpate medial and lateral joint lines with knee flexed 90

Positive: Focal tenderness

Accuracy: Sens 76%, Spec 58% (highly sensitive, poor specificity)

10.5 Special Tests - Patellofemoral

Patellar Apprehension Test

Purpose: Patellar instability

Technique: Supine; attempt to push patella laterally with knee extended, then 30° flexed

Positive: Patient apprehension, guarding, or reports feeling of dislocation

Clarke's Sign (Patellar Grind)

Purpose: Patellofemoral chondromalacia/arthritis

Technique: Supine; quadriceps relaxed; compress patella into trochlea while patient attempts quad set

Positive: Pain under patella

Q-Angle Assessment

Purpose: Patellofemoral alignment

Technique: Measure angle between line from ASIS to patella center, and patella center to tibial tubercle

Normal: Males 8-14 degrees, Females 12-18 degrees

Significance: Increased angle associated with patellar maltracking

10.6 ACL Injury Patterns

Mechanism	Description	Associated Injuries
Non-contact pivot	Plant, cut, knee internally rotated, valgus force	Most common mechanism (70-80%)
Hyperextension	Forced extension beyond normal range	Posterolateral corner, PCL
Contact valgus	Blow to lateral knee	MCL, meniscus (unhappy triad)

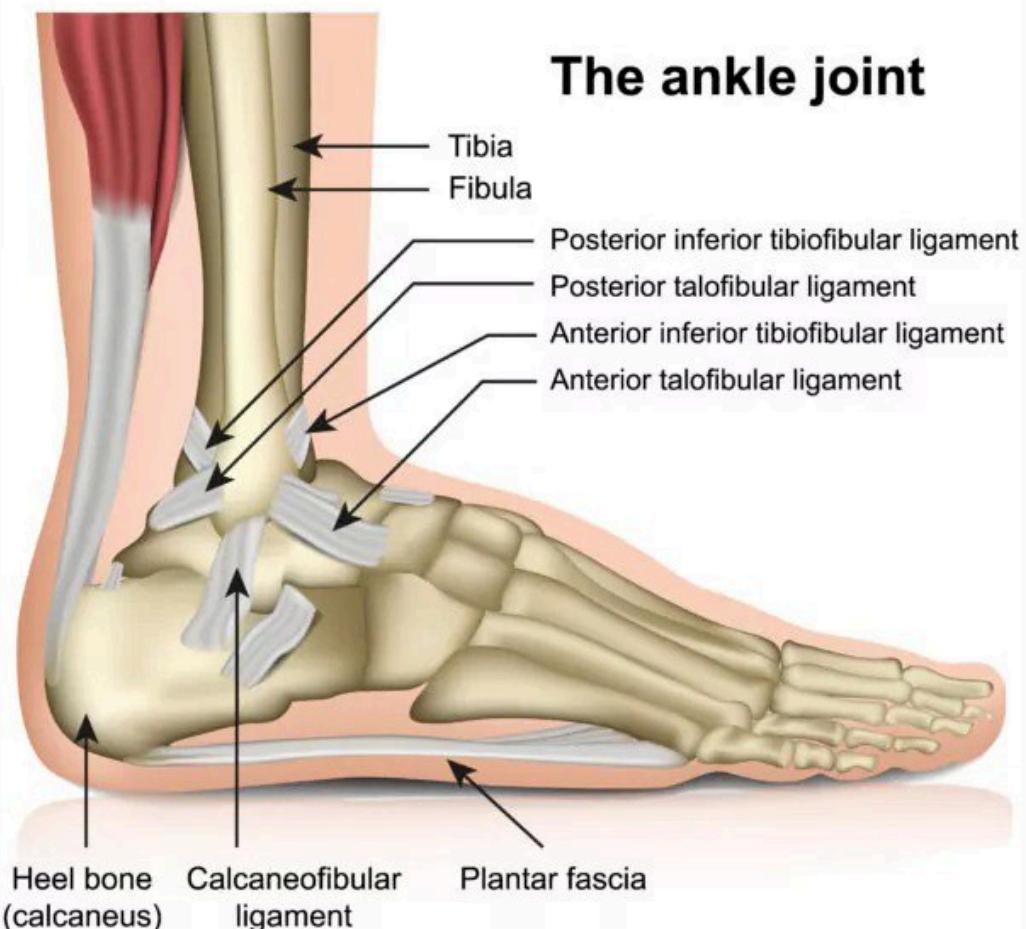
Unhappy Triad: ACL tear + MCL tear + medial meniscus tear.

Classically from valgus blow to lateral knee with foot planted.

Module 11: Ankle and Foot (15 minutes)

11.1 Anatomy

FIGURE 22: Ankle and Foot Anatomy



Ankle Joint (Talocrural)

- **Mortise:** Tibia, fibula, talus articulation

- **Medial ligaments (deltoid):** Strong, fan-shaped; resists eversion
- **Lateral ligaments:** Anterior talofibular (ATFL), calcaneofibular (CFL), posterior talofibular (PTFL); resist inversion
- **ATFL:** Most commonly sprained (inversion + plantarflexion)

Subtalar Joint

- Talus and calcaneus articulation
- Primary motion: Inversion/eversion
- Essential for adapting to uneven terrain

11.2 Ankle ROM

Movement	Normal	Functional
Dorsiflexion	0-20	10 (stairs), 15 (squat)
Plantarflexion	0-50	30 (gait)
Inversion	0-35	15-20
Eversion	0-15	5-10

11.3 Special Tests

Anterior Drawer Test (Ankle)

Purpose: ATFL integrity (lateral ankle sprain)

Technique: Ankle slightly plantarflexed; stabilize tibia, pull talus anteriorly

Positive: Excessive anterior translation or pain compared to uninvolved side

Accuracy: Sens 71%, Spec 68%

Note: Most accurate 4-7 days post-injury (allows swelling to decrease)

Talar Tilt Test

Purpose: CFL integrity (severe lateral sprain)

Technique: Ankle neutral or slightly dorsiflexed; stabilize tibia, invert talus

Positive: Excessive inversion or pain

Note: Positive talar tilt suggests grade II-III sprain

Thompson Test (Simmonds Test)

Purpose: Achilles tendon rupture

Technique: Prone; squeeze calf muscle belly

Positive: No plantarflexion of ankle (tendon not connected)

Accuracy: Sens 96%, Spec 93%

Windlass Test

Purpose: Plantar fasciitis

Technique: Dorsiflex great toe while palpating plantar fascia

Positive: Reproduction of heel pain

Note: Plantar fascia winds around metatarsal head; test tensions the fascia

Navicular Drop Test

Purpose: Excessive pronation/flat foot

Technique: Mark navicular position in subtalar neutral; then weight-bearing; measure change in height

Positive: Drop >10mm suggests excessive pronation

Clinical significance: Associated with overuse injuries

Tinel's Sign (Tarsal Tunnel)

Purpose: Tarsal tunnel syndrome (posterior tibial nerve)

Technique: Tap posterior to medial malleolus

Positive: Paresthesia in plantar foot distribution

11.4 Ottawa Ankle Rules

Radiographic guidelines to reduce unnecessary X-rays:

Ankle X-ray Indicated If:

- Bony tenderness at posterior edge or tip of lateral malleolus OR
- Bony tenderness at posterior edge or tip of medial malleolus OR
- Inability to bear weight both immediately and in ER (4 steps)

Foot X-ray Indicated If:

- Bony tenderness at base of 5th metatarsal OR
- Bony tenderness at navicular OR
- Inability to bear weight both immediately and in ER (4 steps)

Ottawa Ankle Rules: Nearly 100% sensitivity for detecting fractures. If negative, no fracture present. Reduces X-rays by 30-40%.

11.5 Ankle Sprain Grading

Grade	Description	Signs	Recovery
I	Stretch, microscopic tear	Mild swelling, no instability	1-2 weeks

II	Partial tear	Moderate swelling, some instability	3-6 weeks
III	Complete rupture	Severe swelling, significant instability	8-12+ weeks

Module 12: Clinical Reasoning and Documentation (35 minutes)

12.1 Evidence-Based Practice (EBP)

Evidence-based practice integrates three essential components to optimize patient outcomes:

The EBP Triad

- **Best Research Evidence:** Systematic reviews, randomized controlled trials, clinical practice guidelines
- **Clinical Expertise:** Your experience, training, and professional judgment
- **Patient Values:** Patient preferences, expectations, and circumstances

Hierarchy of Evidence: Systematic reviews and meta-analyses provide the highest level of evidence, followed by RCTs, cohort studies, case-control studies, case series, and expert opinion. Clinical practice guidelines synthesize evidence for specific conditions.

Applying EBP in Clinical Practice

When making clinical decisions, ask:

1. What is the patient's primary concern and functional limitation?
2. What evidence exists for different intervention approaches?
3. What are the risks, benefits, and costs of each option?

4. What does the patient prefer based on their values and goals?
5. What is my clinical experience with similar patients?

12.2 Diagnostic Reasoning

The Hypothesis-Oriented Approach

Clinical reasoning involves generating, testing, and refining hypotheses throughout the examination:

1. **Generate Hypotheses:** Based on subjective history, create a list of possible diagnoses
2. **Select Tests:** Choose examination procedures that differentiate between hypotheses
3. **Test Hypotheses:** Perform objective tests and interpret findings
4. **Refine or Confirm:** Update your diagnostic impression based on results
5. **Reassess:** Continuously evaluate as new information emerges

Pattern Recognition vs. Analytical Reasoning

- **Pattern Recognition:** Fast, intuitive recognition of familiar clinical presentations. Develops with experience but can lead to premature closure.
- **Analytical Reasoning:** Systematic, deliberate analysis of findings. More reliable for complex or atypical presentations.

Balanced Approach: Experienced clinicians use pattern recognition for common presentations but switch to analytical reasoning when findings are atypical, red flags are present, or the case is complex.

12.3 Likelihood Ratios and Diagnostic Accuracy

Likelihood ratios (LRs) quantify how much a test result changes the probability of a condition:

Interpreting Likelihood Ratios

LR+ Value	Effect on Probability	Clinical Interpretation
>10	Large increase	Test essentially rules in the condition
5-10	Moderate increase	Substantially increases probability
2-5	Small increase	Somewhat increases probability
1-2	Minimal increase	Rarely changes clinical decision

LR- Value	Effect on Probability	Clinical Interpretation
<0.1	Large decrease	Test essentially rules out the condition
0.1-0.2	Moderate decrease	Substantially decreases probability
0.2-0.5	Small decrease	Somewhat decreases probability
0.5-1.0	Minimal decrease	Rarely changes clinical decision

Clinical Example: Shoulder Impingement

A patient presents with shoulder pain. Pre-test probability of subacromial impingement is 50% based on history.

- **Positive Neer test (LR+ 3.0):** Increases probability to approximately 75%
- **Positive Hawkins-Kennedy (LR+ 2.4):** Further increases probability
- **Positive painful arc (LR+ 3.0):** Combined with other findings, probability now >90%

Cluster Testing: No single test has perfect accuracy. Using clusters of tests with positive likelihood ratios improves diagnostic confidence. The more positive findings in a cluster, the higher the post-test probability.

12.4 Differential Diagnosis Process

Developing a Differential List

Generate a comprehensive list of possible diagnoses, then systematically rule in or rule out:

1. **Life-threatening conditions first:** Always consider serious pathology
2. **Most common conditions:** Common things are common
3. **Patient-specific risks:** Age, activity level, medical history
4. **Atypical presentations:** Don't dismiss findings that don't fit the pattern

Screening for Red Flags

Before focusing on musculoskeletal causes, screen for:

- **Serious pathology:** Cancer, infection, fracture, cauda equina syndrome

- **Systemic conditions:** Inflammatory arthritis, vascular disease
- **Referred pain:** Visceral sources mimicking MSK pain
- **Psychosocial factors:** Depression, fear-avoidance, catastrophizing

12.5 SMART Goals Framework

Well-written goals guide treatment and measure progress:

SMART Criteria Explained

- **Specific:** Clearly defined, not vague. "Walk 1 mile" vs. "Improve walking"
- **Measurable:** Quantifiable outcome. "Knee flexion to 120 degrees" vs. "Better knee bend"
- **Achievable:** Realistic given condition and timeframe. Consider tissue healing times
- **Relevant:** Meaningful to the patient's life and priorities
- **Time-bound:** Specific deadline for achievement. "Within 4 weeks"

Examples of Well-Written Goals

Condition	Short-term Goal (2-4 weeks)	Long-term Goal (6-12 weeks)
Rotator Cuff Tear	Patient will demonstrate pain-free shoulder elevation to 120 degrees within 3 weeks	Patient will return to recreational tennis without pain or limitation within 10 weeks

ACL Reconstruction	Patient will achieve 0-90 degrees knee ROM and normalized gait within 2 weeks	Patient will pass return-to-sport testing and resume competitive soccer within 9 months
Low Back Pain	Patient will tolerate sitting for 60 minutes without pain increase within 2 weeks	Patient will resume full work duties and home exercise program independently within 6 weeks
Total Knee Replacement	Patient will achieve 0-90 degrees knee flexion and ascend/descend stairs with rail within 2 weeks	Patient will walk 1 mile continuously and perform household activities without assistive device within 8 weeks

12.6 Documentation: The SOAP Note

The SOAP format provides a structured, legally defensible record of patient care:

Subjective (S)

Document the patient's report in their own words when possible:

- **Chief Complaint:** Primary reason for visit
- **History of Present Illness:** Onset, mechanism, progression, aggravating/relieving factors
- **Pain:** Location, quality, intensity (VAS 0-10), pattern
- **Functional Status:** What they can/cannot do
- **Prior Level of Function:** Baseline before current condition
- **Patient Goals:** What they want to achieve

- **Previous Treatment:** What's been tried and response
- **Medical History:** Relevant comorbidities, medications, red flags

Objective (O)

Record measurable, observable findings:

- **Observation:** Posture, gait, swelling, atrophy, scars
- **Palpation:** Temperature, tenderness, tissue texture
- **ROM:** Active and passive, with end-feel
- **Strength:** MMT grades (0-5) or dynamometry
- **Special Tests:** Positive and negative findings with interpretation
- **Neurological:** Sensation, reflexes, myotomes
- **Functional Tests:** Timed Up and Go, Berg Balance, etc.

Assessment (A)

Synthesize findings into clinical conclusions:

- **Diagnosis/Impression:** Primary and secondary diagnoses
- **Impairments:** Specific limitations identified
- **Contributing Factors:** Why the problem exists
- **Prognosis:** Expected outcome and timeline
- **Progress:** Compared to previous visits (re-evaluations)

Plan (P)

Outline the treatment approach and next steps:

- **Interventions:** Specific treatments provided today

- **Patient Education:** What was taught and patient's understanding
- **Home Program:** Exercises, precautions, activity modifications
- **Goals:** Short-term and long-term with timelines
- **Follow-up:** Next visit frequency and plan
- **Referrals:** To other providers if indicated

Sample SOAP Note

S: 45-year-old male reports gradual onset of right shoulder pain over 6 weeks. Rates pain 5/10 at rest, 8/10 with overhead reaching. Primary complaint is inability to sleep on right side. Works as electrician and reports difficulty with overhead wiring. No history of trauma. Prior treatment with NSAIDs provided minimal relief. Goal is to return to full work duties without pain.

O: Inspection: No atrophy or swelling noted. Palpation: Tender over anterior/lateral acromion and bicipital groove. AROM: Shoulder flexion 150 degrees (painful at end range), abduction 140 degrees (painful arc 90-120), external rotation 45 degrees, internal rotation to L4. PROM: Full with pain at end range flexion and abduction. Strength: Flexion 4/5 (pain-limited), abduction 4/5, ER 4+/5, IR 5/5. Special Tests: Neer (+), Hawkins-Kennedy (+), Empty Can (+), Speed's (+), Yergason's (-), Drop Arm (-). Cervical screen: Negative.

A: 45-year-old male with subacromial impingement syndrome, likely secondary to supraspinatus tendinopathy and bicipital tendinitis. Positive cluster of impingement tests supports this diagnosis. Cervical involvement ruled out. Good prognosis for conservative management with activity modification, manual

therapy, and progressive strengthening. No red flags identified.

P: 1. Patient education on impingement mechanism and activity modification to avoid overhead reaching during initial phase. 2. Manual therapy: Grade III-IV posterior glides to glenohumeral joint, cross-fiber friction to rotator cuff insertion. 3. Therapeutic exercise: Scapular stabilization exercises, rotator cuff strengthening with theraband (pain-free range), posterior capsule stretching. 4. Home program: Pendulum exercises, wall slides, external rotation with band. Demonstrated proper form. Patient verbalized understanding. 5. Ice 15 minutes post-treatment. 6. Next visit in 2 days. 7. STG: Pain-free AROM to 160 degrees within 2 weeks. LTG: Return to full electrician duties without symptoms within 6 weeks.

12.7 Re-evaluation and Progress Notes

When to Re-evaluate

- **Planned re-evaluations:** Typically every 30 days or 10 visits
- **Significant change:** New symptoms, unexpected response to treatment
- **Plateau:** No progress for 2-3 visits
- **Goal achievement:** When short-term goals are met
- **Change in status:** New injury or exacerbation

Components of Progress Documentation

1. **Current Status:** Compare to previous findings and baseline
2. **Goal Progress:** Which goals achieved, which need modification

3. **Intervention Response:** What's working, what's not
4. **Plan Modifications:** Changes to treatment approach
5. **New Goals:** Updated short-term and long-term goals
6. **Prognosis Update:** Revised outlook based on progress

12.8 Discharge Planning

Discharge Criteria

Consider discharge when:

- Goals have been achieved or maximum benefit reached
- Patient can maintain progress with independent home program
- No further skilled intervention is required
- Patient has been educated on prevention and self-management

Discharge Documentation

- **Initial Status:** Baseline findings at evaluation
- **Current Status:** Final objective measures and functional status
- **Progress Summary:** Improvements achieved during episode of care
- **Goal Outcomes:** Which goals met, partially met, or not met
- **Discharge Status:** Current functional level and any remaining limitations
- **Home Program:** Detailed instructions for maintenance
- **Recommendations:** Follow-up care, referrals, precautions

12.9 Interprofessional Communication

Referral Communication

When referring to physicians or other providers:

- Summarize relevant history and examination findings
- Clearly state reason for referral
- Include specific questions or concerns
- Document response and recommendations received
- Follow up on outcomes

Working with Ancillary Staff

Effective collaboration with PTAs, techs, and support staff:

- Provide clear, written instructions for delegated tasks
- Document supervision and communication
- Regularly review patient progress with team members
- Adjust plans based on PTA feedback

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The content of this course is based on the following evidence-based sources:

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Knowledge Check - 20 Questions

Instructions: Select the best answer for each question. Record your answers separately. The answer key is provided at the end of this section.

Question 1

A 45-year-old patient presents with neck pain radiating down the right arm. Which special test is most specific for cervical radiculopathy?

- A. Cervical distraction test
- B. Spurling's test
- C. Vertebral artery test
- D. Upper limb tension test

Question 2

Which red flag finding requires immediate emergency department referral?

- A. Chronic low back pain for 3 months
- B. Bowel and bladder dysfunction with low back pain
- C. Mild sciatica without weakness
- D. Recurrent episodes of low back pain

Question 3

The Lachman test is considered the gold standard for assessing which structure?

- A. PCL
- B. MCL
- C. ACL
- D. LCL

Question 4

Which test cluster is most effective for diagnosing subacromial impingement?

- A. Neer and Hawkins-Kennedy tests
- B. Empty can and drop arm tests
- C. Apprehension and relocation tests
- D. Speed's and O'Brien's tests

Question 5

A positive FABER test with posterior pain suggests which pathology?

- A. Hip osteoarthritis
- B. Sacroiliac joint dysfunction
- C. Labral tear
- D. Trochanteric bursitis

Question 6

The Thompson test is used to diagnose:

- A. Ankle sprain

- B. Plantar fasciitis
- C. Achilles tendon rupture
- D. Tarsal tunnel syndrome

Question 7

Which special test has the highest sensitivity for lumbar radiculopathy?

- A. Slump test
- B. Straight leg raise
- C. Prone instability test
- D. Valsalva maneuver

Question 8

The Thessaly test is used to assess:

- A. Ligament integrity
- B. Meniscal pathology
- C. Patellar instability
- D. Cartilage defects

Question 9

Which cervical nerve root innervates the triceps muscle?

- A. C5
- B. C6
- C. C7
- D. C8

Question 10

A positive Hoffmann's sign suggests:

- A. Cervical radiculopathy
- B. Cervical myelopathy
- C. Peripheral neuropathy
- D. Tension headache

Question 11

Which tissue type has the longest remodeling phase?

- A. Muscle
- B. Tendon
- C. Ligament
- D. Cartilage

Question 12

The Ottawa Ankle Rules recommend X-ray if there is:

- A. Any ankle swelling after injury
- B. Inability to bear weight immediately and in ER
- C. Pain with ankle movement
- D. History of previous ankle sprain

Question 13

Neuropathic pain is characterized by all EXCEPT:

- A. Burning or electric quality
- B. Dermatomal distribution
- C. Clear mechanical pattern
- D. Positive neurological signs

Question 14

The Trendelenburg test assesses:

- A. Hip flexor tightness
- B. Gluteus medius strength
- C. IT band flexibility
- D. Hip rotator strength

Question 15

Finkelstein's test is used to diagnose:

- A. Carpal tunnel syndrome
- B. De Quervain's tenosynovitis
- C. TFCC tear
- D. Scaphoid fracture

Question 16

The vertebral artery test should be performed before:

- A. Cervical traction
- B. Cervical manipulation
- C. Active ROM testing
- D. Deep neck flexor training

Question 17

Which grade of ankle sprain involves complete ligament rupture?

- A. Grade I
- B. Grade II

C. Grade III

D. Grade IV

Question 18

The crossed straight leg raise test is positive when:

- A. Raising the involved leg reproduces symptoms
- B. Raising the unininvolved leg reproduces symptoms on the involved side
- C. Both legs cannot be raised above 30 degrees
- D. Hip flexion is limited bilaterally

Question 19

Which test is most sensitive for hip impingement (FAI)?

- A. FABER test
- B. FADIR test
- C. Thomas test
- D. Ober test

Question 20

The drop arm test is used to diagnose:

- A. Impingement syndrome
- B. Rotator cuff tear
- C. Instability
- D. Adhesive capsulitis

Answer Key

Passing Score: 70% (14 out of 20 questions correct)

Question	Answer	Explanation
1	B	Spurling's test (93% specific) for cervical radiculopathy
2	B	Cauda equina syndrome signs require emergency referral
3	C	ACL (85% sensitive, 94% specific)
4	A	Neer and Hawkins-Kennedy combined improve diagnostic accuracy
5	B	Posterior pain indicates SI joint involvement
6	C	Absence of plantarflexion when squeezing calf indicates Achilles rupture
7	B	SLR (91% sensitive, though only 26% specific)
8	B	Meniscal tear (90% sensitive, 97% specific)
9	C	C7 (also wrist flexors, middle finger sensation)
10	B	Upper motor neuron involvement suggests cervical myelopathy

11	D	Cartilage has limited healing capacity
12	B	Inability to bear weight is key criterion (nearly 100% sensitivity)
13	C	Clear mechanical pattern is characteristic of nociceptive pain
14	B	Pelvic drop indicates stance hip abductor weakness
15	B	Pain over radial styloid with thumb-in-fist ulnar deviation
16	B	Screening before high-velocity thrust is standard of care
17	C	Grade III with significant instability
18	B	Highly specific (88%) for disc herniation when positive
19	B	FADIR (94-99% sensitive) - flexion, adduction, internal rotation
20	B	Full-thickness tear when patient cannot hold arm at 90 degrees

Course Completion Certificate

This certifies that the participant has successfully completed

**Comprehensive Musculoskeletal
Evaluation and Treatment**

3 CCUs

DrTroy Continuing Education

Course #PT-MSK-001

Participant Feedback Survey

Instructions: Your feedback helps us improve this course and develop future educational offerings. Please complete this survey honestly. Your responses are confidential.

Section 1: Course Content

1. The course objectives were clearly stated and achieved.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

2. The course content was relevant to my clinical practice.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

3. The examination techniques and special tests were explained clearly.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

4. The inclusion of sensitivity, specificity, and likelihood ratios enhanced my understanding.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

5. The anatomical illustrations and figures were helpful.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

Section 2: Course Format

6. The self-paced format worked well for my learning style.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

7. The time allocated for each module was appropriate.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

8. The knowledge check questions accurately assessed my understanding.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

Section 3: Instructor and Presentation

9. The instructor demonstrated expertise in the subject matter.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

10. The content was presented in an organized, logical manner.

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

Section 4: Overall Assessment

11. Overall, how would you rate this course?

Poor | Fair | Good | Very Good | Excellent

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

12. How likely are you to recommend this course to a colleague?

Not at all likely | Not likely | Neutral | Likely | Very likely

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

Section 5: Open-Ended Feedback

13. What aspects of this course were most valuable to your practice?

14. What topics or content would you like to see added or expanded?

15. Were there any sections that were unclear or needed more detail?

16. How will you apply what you learned in this course to your clinical practice?

17. Additional comments or suggestions:

Section 6: Demographics (Optional)

18. Years in practice:

Less than 1 year

1-5 years

6-10 years

11-20 years

21+ years

19. Primary practice setting:

Outpatient/Private practice

Hospital/Inpatient

Home health

Skilled nursing facility

Academic/Research

Other: _____

20. Primary state of practice:

Thank you for completing this survey!

Your feedback is essential for maintaining and improving the quality of our continuing education programs.