Study Guide 3

This guide covers the two halves of a case station. Chapter 5 is the history: the opening routine, the question funnel, neutral wording and the seven red flag families that must never be skipped. Chapter 6 is the examination: vital sign technique, the orthopedic tests and clusters, the root by root neurological screen and how to pick the few tests that matter. Read the "what to know" paragraphs, study the diagram, then work each case with the steps covered and say the findings aloud as you would in the room.

WHAT THIS GUIDE COVERS

- Chapter 5 · door card hypotheses, the opening, consent and rapport, open to closed questioning, OPQRST, discriminating questions, leading and stacked questions, cues, the seven red flag families, cauda equina, dissection and SNOOP, medications, the brief past, family, social and work history, flags, and the summary.
- Chapter 6 · blood pressure technique and errors, BP categories and crisis, pulse, respiration and temperature, spinal, pelvic and extremity tests, Wainner and Laslett clusters, the Ottawa rules, dermatomes, myotomes and reflexes, upper versus lower motor neuron signs, Romberg, SnNout and SpPin, and grouping tests by position.

CHAPTER 5

The History in a Standardized Patient Encounter

Read it in full: **Chapter 5 in the textbook**. Practice it: **the practice exams** and **the flashcards**.

What to know

A history station scores three overlapping things: content (the facts that matter), process (how you collected them) and safety (catching what would hurt the patient if missed). Charm without the saddle numbness question fails, and a complete checklist delivered as an interrogation loses process points. Timing and weighting change, so practice to whatever the current official candidate materials describe.

Use the door card's 30 seconds. Read it for **who** (age and sex shift probabilities most), **what** (the complaint), **the task** and **any data** such as vitals, a drug or a diagnosis. Then build three to five hypotheses with at least one must not miss condition. A 68 year old man with new thoracic pain should make you think of compression fracture, metastasis, aortic disease, cardiac disease and zoster before a rib problem. "Obtain a focused history" means do not start an examination.

The opening is a fixed routine: knock, hand hygiene in view, name and role, **two identifiers stated by the patient** (usually full name and date of birth), preferred name, comfort, purpose with consent, and an **agenda question**: "Is there anything else you were hoping we would address today?" That question surfaces hidden worries early instead of at the end. The most often dropped items are the second identifier, hand hygiene and the agenda question. If the patient declines part of the encounter, acknowledge it, explain what you cannot determine without it, offer alternatives and document. Never proceed over an objection.

Rapport inside a time limit comes from fast behaviors: the preferred name, eye level seating, open posture, a brief empathy statement and visible listening. Naming and validating ("That sounds really frightening") takes three seconds. Avoid false reassurance such as "I am sure it is nothing" before you have data.

Start open, then funnel. Let the patient finish the opening statement, which usually takes well under two minutes; interrupting makes the history longer. Ask "Anything else?" once, then fill gaps with OPQRST and associated symptoms, then ask the few discriminating questions, and finish with closed red flag questions. Have the patient point with one finger: a finger at the PSIS suggests the SI joint (the **Fortin finger sign**), while a sweeping hand suggests a diffuse source.

Each question should change a probability or clear a danger. Ask yourself, "If the answer is yes, what would I do differently?" Flexion and sitting load the disc; extension and rotation load the facets. Radicular pain is usually leg dominant and below the knee. **Vascular claudication** eases on standing still; **neurogenic claudication** needs sitting or bending forward and is easier uphill or leaning on a cart. Prolonged morning stiffness that improves with movement suggests spondyloarthritis. Pain unchanged by movement suggests a visceral source.

A **leading question** suggests the answer: "You have not had any bladder problems, have you?" A **stacked question** bundles several items, and the patient answers only the last. Closed is not the same as leading: "Have you had any numbness in the area you would sit on a saddle?" is closed but neutral, and that is how red flags should be asked. Pick up every **cue** at once, such as a pause, a wince, "my dad had something like this" or weight loss "but I have been dieting." A missed cue is usually a lost checklist item.

The red flag screen is the core of the station, because cases are written around one serious condition hidden in an ordinary story. Touch seven families every time: **cancer**, **infection**, **fracture**, **cauda equina and cord**, **vascular**, **visceral** and **medications**. Single red flags have modest accuracy; their value lies in combinations and in the cost of missing a true positive. Unexplained weight loss is about 10 lb or 5 percent in 6 months, and failure of conservative care is about a month.

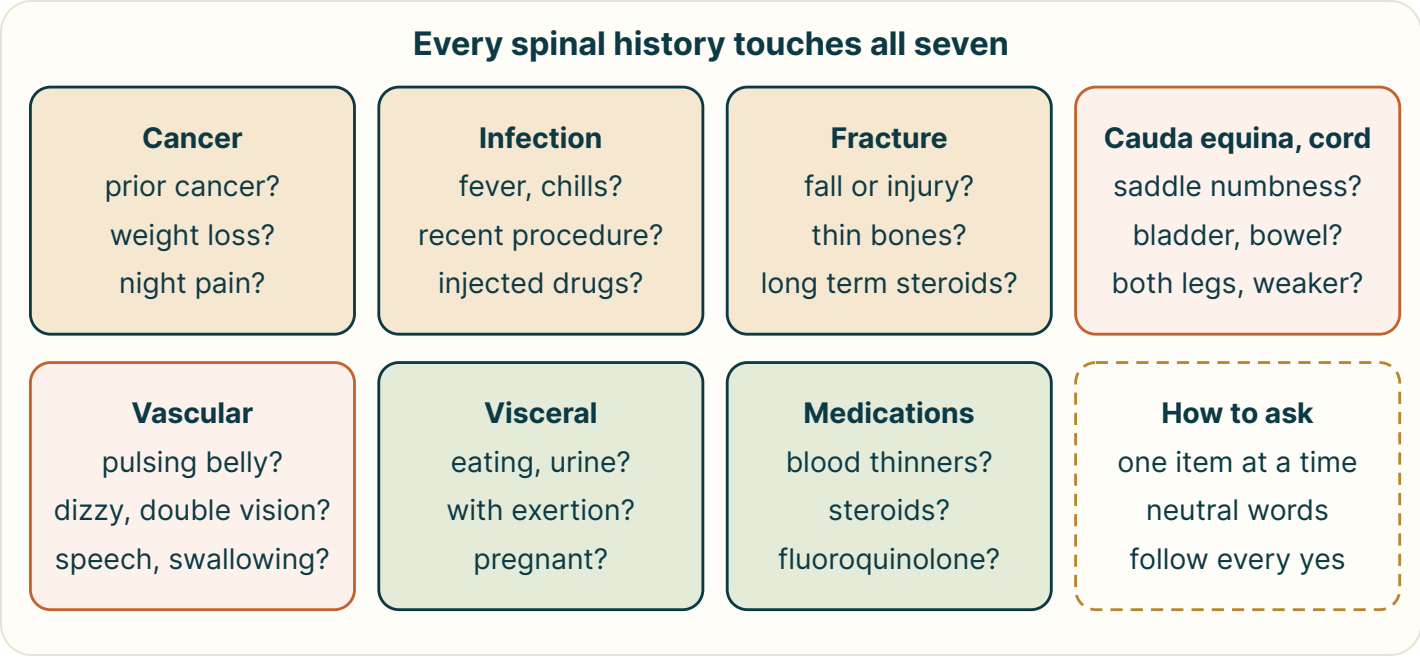
Cauda equina syndrome is compression of the roots below the conus, most often by a large central disc at L4 to L5 or L5 to S1. Outcomes depend on fast decompression, especially before established retention. Ask about saddle numbness, urinary change (hesitancy, poor stream, loss of the full bladder sensation, retention, overflow), bowel change, sexual dysfunction, both legs and progressive weakness, in plain words. New features turn the station into an emergency: stop, explain, do not treat, and arrange same day emergency evaluation with MRI. The bladder and bowel question is the most common critical omission in low back stations.

Neck and headache cases add vascular and neurological screens. Cervical artery dissection presents as new, severe, often unilateral neck pain or headache unlike any before, sometimes after minor trauma, with posterior circulation signs remembered as the 5 D's and 3 N's: dizziness, diplopia, dysarthria, dysphagia, drop attacks, nausea, numbness and nystagmus, plus ataxia. Carotid dissection may add a partial Horner syndrome. Headache red flags follow **SNOOP**: systemic symptoms, neurological signs, sudden onset (thunderclap, subarachnoid hemorrhage until proven otherwise), older age at onset (think giant cell arteritis after 50) and pattern change. Thoracic pain has the most visceral mimics; tearing chest or interscapular pain is aortic dissection until proven otherwise.

Ask medications by class, because patients forget them. Anticoagulants change force, technique and the imaging threshold after trauma, and a new severe headache or deficit on one is an emergency. Long term steroids mean fracture, infection and AVN risk. Fluoroquinolones bring tendon rupture, statins myalgia, and bisphosphonates atypical femoral fracture with thigh pain.

Keep the past, family, social and occupational history brief and purposeful. Ask prior episodes, surgery or fusion, cancer, osteoporosis, RA or Down syndrome, AS, diabetes, bleeding disorders and heart disease. Family history covers inflammatory arthritis and its relatives, cancer, aneurysm and a parent with hip fracture. Social history covers pack years, alcohol, drugs, activity and mood. Ask "What do you think is causing this?" and "What are you hoping for?" to surface **yellow flags** (fear avoidance, catastrophizing), **blue flags** (work perceptions), **black flags** (claims, litigation, policy) and **orange flags** (psychiatric illness). A disclosure of suicidal thoughts or abuse is a safety emergency.

End with a short summary of key positives, the red flag **negatives said aloud**, and the patient's concerns, then check accuracy. A correction can send you back to a red flag. Then explain the examination, offer gown, drape and chaperone, and get consent with a stop signal. If the history uncovered an emergency, the transition is to referral, not testing.



Seven families in every spinal history. Touch every family, even briefly. Age, sex and the story decide which family gets the deepest questioning, and any yes is followed up before you move on.

LOCK THESE IN

- Door card: who, what, task, data; three to five hypotheses with one must not miss.
- Two identifiers stated by the patient, plus the agenda question.
- Open, listen, funnel: OPQRST with associated symptoms, discriminating questions, closed red flags.
- Closed and neutral is fine; leading and stacked are not.
- Seven families: cancer, infection, fracture, cauda equina and cord, vascular, visceral, medications.
- Cauda equina questions in every lumbar or leg case, one item at a time.
- Say red flag negatives aloud in the summary and check accuracy.
- An emergency in the history means the transition is to referral, not to the exam.

Discriminating questions

Hypotheses	Question	Why it helps
Disc versus facet	Worse sitting and bending, or standing and leaning back?	Flexion loads the disc; extension loads the facets
Radicular versus somatic	Below the knee? Leg or back worse?	Radicular pain is leg dominant, often below the knee
Radiculopathy	Numbness or weakness, catching a toe?	Deficit changes urgency and the exam
Neurogenic versus vascular claudication	Does standing still help, or must you sit or bend?	Vascular eases standing still; neurogenic needs flexion
Inflammatory versus mechanical	How long stiff in the morning? Does exercise help?	Long stiffness eased by movement suggests spondyloarthritis
Myelopathy	Clumsy hands, buttons, gait change?	Cord signs mean referral
Musculoskeletal versus visceral	Does moving change the pain at all?	Visceral pain ignores movement

Mimics and medication flags

Item	Points to	Clue or relevance
Left shoulder, arm, jaw pain	Myocardial ischemia	With exertion, eases with rest, sweating
Right shoulder or scapula	Gallbladder	After fatty meals, nausea
Flank pain to the groin	Kidney stone	Colicky, restless, hematuria
Back pain in an older smoker	Aortic aneurysm	Deep pulsing or tearing, pulsatile mass
Pelvic or low back pain in women	Gynecologic causes	Cyclic, bleeding, possible pregnancy
Anticoagulants	Bleeding	Modify force; new headache or deficit is an emergency
Long term corticosteroids	Fracture, infection, AVN	Imaging threshold drops
Fluoroquinolones	Tendon rupture	Especially Achilles
Bisphosphonates	Atypical femoral fracture	Prodromal thigh pain

Worked cases

WORKED CASE 1 · AN L5 STORY WITH A CANCER CUE

Thomas, 56, has three weeks of right leg pain. He describes burning from the buttock to the outer calf and top of the foot, worse sitting, shooting with a cough, numb on the top of the foot, and he trips on curbs.

STEP 1 · BUILD HYPOTHESES

L5 or S1 radiculopathy, stenosis, deep gluteal syndrome, hip disease, and the must not miss group: metastasis (over 50), cauda equina and vascular causes.

STEP 2 · READ THE PATTERN

Outer calf and dorsum of the foot, plus a foot drop symptom, fit L5.

STEP 3 · SCREEN ONE ITEM AT A TIME

Saddle sensation, bladder, bowel, sexual function, one leg or both, progression, cancer, weight loss, night pain, fever.

STEP 4 · CHASE THE CUE

He says his PSA was "a little high last year." At 56 with root pain that is a cancer cue to explore and document.

STEP 5 · TRANSITION

Plan heel walking, great toe extension strength and dermatomal testing in the exam.

WORKED CASE 2 · AN ORDINARY LIFT IN AN OLDER WOMAN

Evelyn, 72, has sudden mid back pain since lifting a laundry basket. BP 142/86.

STEP 1 · HYPOTHESES

Osteoporotic compression fracture, metastasis or myeloma, zoster, aortic disease, cardiac or pulmonary pain, and mechanical pain last.

STEP 2 · FRACTURE FAMILY

Osteopenia and two years of prednisone for polymyalgia rheumatica.

STEP 3 · OTHER FAMILIES

Breast cancer 15 years ago; no fever; pain not tearing; not related to eating or breathing; no leg weakness or bladder change.

STEP 4 · MEDICATIONS

Prednisone, calcium, and apixaban for atrial fibrillation.

STEP 5 · DECIDE

High probability of compression fracture, metastasis still on the list, anticoagulant flagged for manual therapy safety, imaging before any thoracic manipulation.

WORKED CASE 3 · THE SUMMARY THAT CHANGES THE STATION

Pooja, 38, has neck pain and headache four days after a rear end collision. Red flags were negative. You summarize them aloud and ask, "Did I get that right?" She adds that yesterday the left side of her face felt funny for a few minutes.

STEP 1 · RECOGNIZE THE CORRECTION

Transient facial numbness after a neck injury is a possible posterior circulation symptom of vertebral artery dissection.

STEP 2 · STOP

No provocative cervical tests and no manipulation.

STEP 3 · ASSESS WITHOUT DELAY

Vital signs and a quick neurological and cranial nerve screen, only if it does not delay care.

STEP 4 · REFER AND DOCUMENT

Explain calmly, arrange urgent emergency evaluation with vascular imaging, advise her not to drive herself, and document.

TRAPS PEOPLE FALL INTO

- **Dropping the second identifier.** Patient identification is a safety behavior, not a courtesy.
- **Stacking red flags.** "Any fever, chills or weight loss?" screens nothing; ask one at a time.
- **Confusing closed with leading.** "Any saddle numbness?" is fine; "You haven't had any, have you?" is not.
- **Ignoring a cue.** "My dad had something like this" is usually a checklist item.
- **Skipping associated symptoms.** That is where numbness, fever and visceral clues appear.
- **Giving false reassurance early.** "It is probably just a muscle" is premature closure.
- **Proceeding over an objection.** Respect a refusal, explain, offer alternatives, document.
- **Examining after an emergency history.** New saddle numbness or retention means referral now.

Chapter 5 self-test · ten items

1. A door card reads "Obtain a focused history" for a 45 year old with back pain. What should you avoid?

A. Asking the patient about medications
B. Asking about bladder and bowel function
C. Summarizing the history before leaving
D. Starting an examination during the encounter

D. Starting an examination during the encounter The task wording defines what is scored. A history only station does not reward an examination.

2. Which opening question best surfaces a hidden concern early in the encounter?

A. "Can you tell me your full name and your date of birth, please?"
B. "Is there anything else you were hoping we would address today?"
C. "Are you comfortable sitting there, or would you rather stand?"
D. "On a scale of 0 to 10, how bad is the pain right now for you?"

B. "Is there anything else you were hoping we would address today?" The agenda question brings out worries such as a fear of cancer or a work form before they wreck your timing at the end.

3. A patient points with one finger just below the posterior superior iliac spine. What does this suggest?

A. A diffuse muscular source
B. A sacroiliac joint source
C. A visceral source of pain
D. An upper lumbar disc source

B. A sacroiliac joint source Pointing to the PSIS with one finger is the Fortin finger sign, which points toward the sacroiliac joint.

4. Which question is closed but neutral?

A. "You haven't had any bladder trouble, have you?"
B. "The pain is sharp and shooting, isn't it?"
C. "Have you noticed any numbness in the saddle area?"
D. "Any fever, chills, sweats or weight loss?"

C. "Have you noticed any numbness in the saddle area?" Closed questions are fine for red flags if they do not suggest the answer. The others are leading or stacked.

5. A 70 year old's calf pain on walking eases when she stands still. Which type of claudication does this suggest?

A. Vascular claudication
B. Neurogenic claudication
C. Lumbar radiculopathy
D. Inflammatory back pain

A. Vascular claudication Vascular claudication eases with standing still. Neurogenic claudication needs sitting or bending forward.

6. During a history, a patient mentions new difficulty starting urination and numbness when wiping. What is the correct next step?

A. Finish the planned examination before deciding about referral
B. Ask the patient to return in a week if symptoms are unchanged
C. Stop, explain the concern and arrange same day emergency evaluation
D. Perform a provocative straight leg raise to confirm the level

C. Stop, explain the concern and arrange same day emergency evaluation New urinary change and saddle numbness suggest cauda equina syndrome. Outcomes depend on fast decompression, so the station becomes a referral.

7. A 34 year old has a new, severe, one sided neck pain after a sudden head turn, with brief double vision. What does this pattern suggest?

A. Cervical facet sprain
B. Tension type headache
C. Cervical radiculopathy
D. Cervical artery dissection

D. Cervical artery dissection New severe unilateral neck pain unlike any before, with a posterior circulation sign such as diplopia, suggests dissection and calls for referral, not treatment.

8. A 62 year old reports a new headache with jaw pain on chewing and scalp tenderness. Which SNOOP element is most relevant?

A. Sudden onset, raising subarachnoid hemorrhage
B. Systemic symptoms, raising an infection
C. Older age at onset, raising giant cell arteritis
D. Pattern change in a long standing headache

C. Older age at onset, raising giant cell arteritis New headache after 50 with jaw claudication and scalp tenderness raises giant cell arteritis.

9. Which medication history most raises concern for tendon rupture?

A. A long term statin
B. A recent fluoroquinolone
C. A daily bisphosphonate
D. A direct anticoagulant

B. A recent fluoroquinolone Fluoroquinolones are linked to tendinopathy and rupture, especially of the Achilles tendon.

10. A patient says, "I think my spine is crumbling, so I have stopped moving." What kind of flag is this?

A. A yellow flag
B. A blue flag
C. A black flag
D. A red flag

A. A yellow flag Fear avoidance beliefs and catastrophizing are yellow flags, psychological factors that predict chronicity.

Performing the Examination in a Station

Read it in full: **Chapter 6 in the textbook**. Practice it: **the practice exams** and **the flashcards**.

What to know

Vital signs are both a skill station and a safety screen. A fever turns back pain into possible infection, a very high blood pressure turns a neck adjustment into a referral, and a fast irregular pulse may be atrial fibrillation. When vitals are given on the door card, read them and act. When you measure them, technique is scored step by step.

For **blood pressure**, seat the patient with back supported, feet flat, legs uncrossed, quiet, arm bared and supported at heart level. The cuff bladder should encircle about 80 percent of the arm, with width about 40 percent of the circumference. Center the bladder over the brachial artery with the lower edge 2 to 3 cm above the crease. Palpate the systolic estimate first, which protects against the auscultatory gap. Inflate 20 to 30 mmHg above the estimate and deflate at 2 to 3 mmHg per second. Phase I (first repetitive tapping) is systolic and phase V (disappearance) is diastolic in adults. Average two or more readings, and at a first visit measure both arms; a consistent difference over about 10 to 15 mmHg is noteworthy.

Errors are predictable. A cuff too small, an arm below heart level, an unsupported arm or back, crossed legs, talking, a full bladder, caffeine or nicotine all read **high**. A cuff too large or an arm above heart level reads **low**. Deflating too fast underestimates systolic and overestimates diastolic. Categories: normal under 120/80; elevated 120 to 129 with diastolic under 80; stage 1 130 to 139 or 80 to 89; stage 2 140 or higher or 90 or higher. **Over 180 and/or 120 is a hypertensive crisis**: with target organ symptoms call emergency services; without them arrange prompt medical evaluation and do not do manual therapy that day. Orthostatic hypotension is a fall of 20 systolic or 10 diastolic within about three minutes of standing.

Take the pulse with two finger pads, never the thumb. Count 30 seconds and double if regular; count a full 60 seconds if irregular. An irregularly irregular pulse suggests atrial fibrillation, a stroke risk factor. Normal is 60 to 100. Count respirations while appearing to take the pulse;

normal is 12 to 20. Fever is 100.4°F (38.0°C) or higher. Saturation of 95 percent or more is normal; under about 92 or falling needs urgent evaluation.

Every orthopedic test has five beats: **explain, position, perform, ask, state**. Test the uninvolved side first when practical, ask a neutral question ("What do you feel, and where?"), and stop at severe pain, neurological symptoms, dizziness or vascular signs. Positive means the patient's own symptom in the expected place. Never force a provocative cervical test when the history suggests instability, fracture or vascular disease.

In the neck, **Spurling** (extension, side bend and rotation toward the symptomatic side, then gentle axial pressure) reproduces radiating arm pain and is specific but modestly sensitive. **Distraction** is positive when it relieves symptoms. **Upper limb tension test A** is highly sensitive. **Bakody** relief suggests root compression rather than a shoulder lesion. **Lhermitte** suggests a cord lesion. Soto Hall pain after trauma means stop and image. The **Wainner cluster** is ULTT A, Spurling, distraction and rotation under 60 degrees toward the involved side; three positives make radiculopathy considerably more likely and four very likely. Positional vertebral artery tests have poor accuracy; never present a negative one as clearance to manipulate.

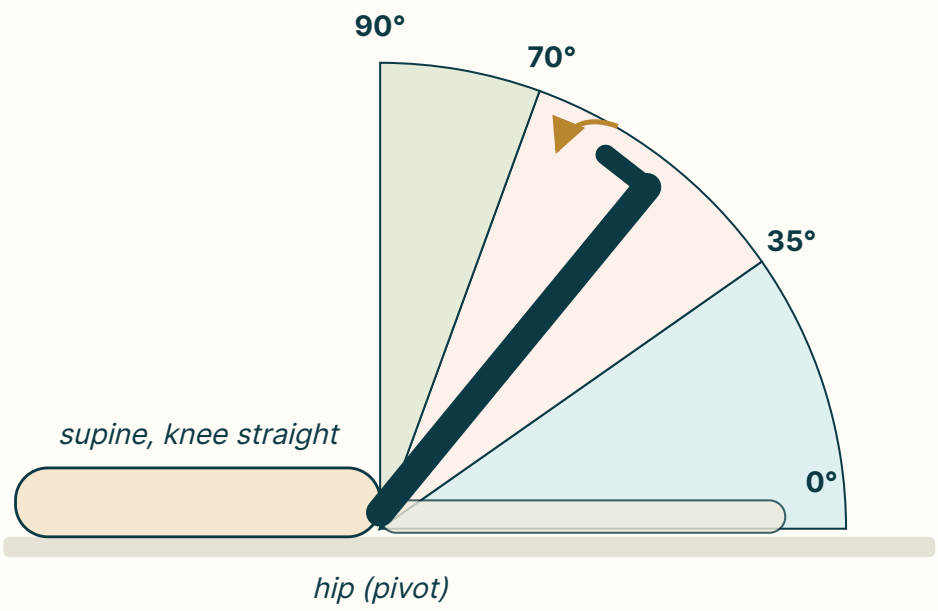
In the low back, the **straight leg raise** reproduces radiating pain below the knee, usually between about 35 and 70 degrees, and is highly sensitive. Braggard sensitizes it with dorsiflexion. The **crossed SLR** is highly specific for a large or medial herniation. Slump symptoms ease when the neck is extended. Kemp gives local pain for facets and radiating pain for foraminal encroachment. The femoral nerve stretch tests L2 to L4. A modified Schober increase under about 5 cm suggests reduced lumbar flexion, as in AS. Chest expansion under about 2.5 cm suggests costovertebral restriction. For the SI joint, use the **Laslett cluster**: distraction, thigh thrust, compression, sacral thrust and Gaenslen; three or more of five support the SI joint. Waddell signs in three or more categories suggest a nonorganic contribution, not malingering.

In the limbs, run inspect, palpate, range of motion, special tests and a neurovascular check, and clear the joint above and below. **Lachman** is the most sensitive ACL test; the pivot shift is the most specific. Drop arm and external rotation lag point to a full thickness cuff tear; Neer and Hawkins Kennedy are sensitive but not specific. Collateral laxity at 30 degrees only means an isolated collateral injury; laxity at 0 degrees adds cruciate or capsule. Thompson with no plantar

flexion means complete Achilles rupture. The **Ottawa knee rule** calls for films at age 55 or more, isolated patellar tenderness, fibular head tenderness, inability to flex to 90 degrees or inability to bear weight for four steps.

The neurological screen tests each root with a **dermatome**, a **myotome** and a **reflex**, both sides. Reflex pairs: biceps C5, brachioradialis C6, triceps C7, patellar L4, Achilles S1. L5 has no reliable reflex, so test great toe extension, hip abduction and heel walking. Grade strength 0 to 5 and reflexes 0 to 4+, and use reinforcement (Jendrassik) before calling a reflex absent. Upper motor neuron signs are hyperreflexia, clonus, spasticity, Babinski and Hoffmann; lower motor neuron signs are reduced reflexes, flaccidity, early atrophy and fasciculations. **Romberg tests proprioception**, not the cerebellum: steady with eyes open but swaying with eyes closed means sensory ataxia.

Choose tests from hypotheses, not from a list. Name the leading diagnosis, the alternatives and the dangerous possibility, then pick a safety screen, a regional screen, two or three special tests, and the neurological screen when indicated. A sensitive test that is negative helps rule out (**SnNout**); a specific test that is positive helps rule in (**SpPin**). A positive likelihood ratio above about 5 to 10 raises probability meaningfully, and a negative one below about 0.1 to 0.2 lowers it. Group tests by position: standing, seated, supine, side lying, prone. Drape, offer a chaperone, and never examine the breast, genitalia or perineum in a station.



Read the zone

0 to 35°
takes up slack

35 to 70°
L5 and S1 root tension: radiating pain below the knee is positive

over 70°
hamstring, SI joint or lumbar joints

Braggard:
lower until pain eases, then dorsiflex the foot

Where the straight leg raise is read. Radiating pain below the knee between about 35 and 70 degrees suggests L5 or S1 root tension. Local back pain or hamstring tightness is not a positive radicular test.

LOCK THESE IN

- BP: right cuff, arm at heart level, palpate first, deflate 2 to 3 mmHg per second, phases I and V.
- Small cuff or low arm reads high; large cuff or high arm reads low.
- Over 180/120: no manual care that day; with symptoms, emergency services.
- Irregular pulse: count a full minute; irregularly irregular suggests atrial fibrillation.
- Positive means the patient's own symptom in the expected place.
- Wainner for the neck, Laslett for the SI joint: clusters beat single tests.
- Reflexes C5, C6, C7, L4, S1; L5 has none reliable. Romberg is proprioception.
- Group tests by position and state every finding with side and location.

Vital signs and errors

Item	Value or effect	Action
Normal BP	Under 120/80	Recheck abnormal values after rest
Stage 1	130 to 139 or 80 to 89	Recheck, monitor
Stage 2	140 or more or 90 or more	Medical follow up
Crisis	Over 180 and/or 120	No manual care; emergency if symptoms
Cuff too small, arm low, legs crossed, talking	Reads falsely high	Fix the technique
Cuff too large, arm high	Reads falsely low	Fix the technique
Fast deflation	Systolic low, diastolic high	2 to 3 mmHg per second
Pulse	60 to 100, regular	Irregularly irregular: atrial fibrillation
Respirations	12 to 20	Tachypnea with chest pain: urgent
Temperature	Fever 100.4°F (38.0°C) or more	With spine pain: no manipulation, refer
Saturation	95% or more	Under about 92%: urgent evaluation

Root levels and test roles

Root or hypothesis	Sensory, motor, reflex or test	Note
C5	Lateral arm; deltoid; biceps	Shoulder abduction
C6	Lateral forearm, thumb; wrist extension; brachioradialis	Thumb tingling
C7	Middle finger; triceps; triceps reflex	Elbow extension
C8	Little finger; grip; none reliable	Finger flexion
L4	Medial leg; tibialis anterior, knee extension; patellar	Medial malleolus
L5	Lateral leg, dorsum, great toe; EHL, hip abduction; none reliable	Heel walk
S1	Lateral foot, sole; plantar flexion, eversion; Achilles	Toe walk
Disc with radiculopathy	Rule out: SLR; rule in: crossed SLR	Plus a matching deficit
Cervical radiculopathy	Rule out: ULTT A; rule in: Spurling, Wainner 3 or 4 of 4	Rotation under 60 degrees
SI joint	Laslett 3 or more of 5	Distraction, thigh thrust, compression, sacral thrust, Gaenslen
ACL	Rule out: Lachman; rule in: pivot shift	Compare sides
Full thickness cuff tear	Drop arm, external rotation lag	Specific

Worked cases

WORKED CASE 1 · A BLOOD PRESSURE IN THE CRISIS RANGE

Gerald, 63, has a week of neck pain. Task: vitals and a focused exam. The palpated estimate is about 190.

STEP 1 · MEASURE CORRECTLY

Large cuff for his muscular arm, inflate to 220, deflate at 2 to 3 mmHg per second: 186/112. Pulse 88 and irregularly irregular, counted a full minute. Respirations 16.

STEP 2 · SCREEN SYMPTOMS

Headache, chest pain, breathlessness, visual change, weakness, confusion. He has a mild headache only.

STEP 3 · RECHECK AFTER REST

182/110, still over 180 systolic.

STEP 4 · ACT

No cervical manipulation. Explain that the pressure and irregular pulse need medical evaluation today, give 911 advice for chest pain, breathlessness, weakness, speech or vision change, arrange same day assessment, and document the readings, arm and position.

WORKED CASE 2 · COUNTING A CLUSTER

Ana, 39, has neck pain and tingling into the left thumb. Left Spurling reproduces pain into the lateral forearm and thumb, distraction relieves it, ULTT A is positive on the left, and left rotation is about 50 degrees.

STEP 1 · MAP THE LEVEL

Thumb and lateral forearm point to C6.

STEP 2 · COUNT THE WAINNER ITEMS

Spurling yes, distraction yes, ULTT A yes, rotation under 60 degrees yes: four of four.

STEP 3 · INTERPRET

Four positives make cervical radiculopathy very likely.

STEP 4 · FINISH SAFELY

C5 to T1 neurological screen, Phalen and Tinel for carpal tunnel, and a myelopathy screen (Hoffmann, gait) before concluding.

WORKED CASE 3 · UPPER MOTOR NEURON SIGNS IN FOUR LIMBS

Howard, 58, has neck stiffness and clumsy hands. Biceps and triceps are 3+ both sides, Hoffmann is positive both sides, patellar 3+, three beats of left ankle clonus, left Babinski upgoing, a broad based gait and sway with eyes closed.

STEP 1 · SORT THE SIGNS

Hyperreflexia, Hoffmann, clonus and Babinski are upper motor neuron signs.

STEP 2 · READ THE ROMBERG

Sway with eyes closed means dorsal column involvement.

STEP 3 · CONCLUDE

Upper motor neuron signs in all four limbs with hand clumsiness and gait change fit cervical myelopathy.

STEP 4 · ACT

No cervical manipulation and no provocative compression tests. Prompt MRI and spine surgery referral, fall advice, and emergency advice for bladder change or rapid worsening.

TRAPS PEOPLE FALL INTO

- **Skipping the palpatory estimate.** An auscultatory gap leads to underestimating systolic pressure.
- **Counting an irregular pulse for 30 seconds.** Count a full minute.
- **Calling local back pain on SLR positive.** Radiating pain below the knee is the positive.
- **Calling distraction positive when pain increases.** Relief is the positive finding.
- **Using a negative vertebral artery test as clearance.** These tests have poor accuracy.
- **Calling a reflex absent without reinforcement.** Use Jendrassik first.
- **Thinking Romberg tests the cerebellum.** It tests proprioception.
- **Testing in alphabetical or regional order.** Group by position to save time and pain.

Chapter 6 self-test · ten items

1. A nurse uses a cuff that is too small on a large arm. How will the reading be affected?

A. It will read falsely low
B. Only diastolic will change
C. It will read falsely high
D. It will not change at all

C. It will read falsely high A cuff that is too small overestimates pressure. A cuff that is too large underestimates it.

2. Why is the systolic pressure estimated by palpation before auscultation?

A. To avoid missing an auscultatory gap and underestimating systolic pressure
B. To warm the cuff bladder so the reading is more comfortable for the patient
C. To find the brachial artery so the stethoscope can be tucked under the cuff
D. To measure the diastolic pressure before the Korotkoff sounds appear

A. To avoid missing an auscultatory gap and underestimating systolic pressure Some hypertensive patients have a silent interval. Inflating above the palpated value prevents a falsely low systolic reading.

3. A patient's blood pressure is 184/122 on recheck, with no symptoms. What is the correct plan?

A. No manual therapy today and prompt medical evaluation
B. Proceed with gentle cervical manipulation as planned
C. Recheck at the next routine visit in two weeks
D. Call emergency services and begin chest compressions

A. No manual therapy today and prompt medical evaluation Over 180 and/or 120 is a hypertensive crisis. Without target organ symptoms it calls for prompt evaluation, not treatment that day.

4. The radial pulse is irregularly irregular. How should it be counted?

A. For 15 seconds, times four
B. For a full 60 seconds
C. For 30 seconds, times two
D. With the thumb, for accuracy

B. For a full 60 seconds An irregular pulse needs a full minute. Irregularly irregular suggests atrial fibrillation, a stroke risk factor.

5. During a straight leg raise, the patient reports pain down the leg below the knee at 50 degrees. How is this read?

A. Negative, because the pain began after 35 degrees
B. Positive, suggesting hamstring tightness only
C. Positive, suggesting L5 or S1 root tension
D. Negative, because no back pain was reproduced

C. Positive, suggesting L5 or S1 root tension Radiating pain below the knee between about 35 and 70 degrees suggests root irritation.

6. Which finding is the positive result for the cervical distraction test?

A. Increased pain in the posterior neck
B. Electric shock down the spine
C. Dizziness and visual blurring
D. Relief of the arm or neck symptoms

D. Relief of the arm or neck symptoms Relief with distraction supports foraminal or root compression. Increased pain suggests muscle or ligament strain.

7. Which three or more positive provocation tests support the sacroiliac joint as the pain source?

A. Any three of SLR, slump, Kemp, Valsalva and the femoral nerve stretch test
B. Any three of FADIR, Thomas, Ober, log roll and the Trendelenburg test
C. Any three of Spurling, distraction, Bakody, Lhermitte and the Soto Hall test
D. Any three of distraction, thigh thrust, compression, sacral thrust and Gaenslen

D. Any three of distraction, thigh thrust, compression, sacral thrust and Gaenslen The Laslett cluster uses five SI provocation tests; three or more of five supports the SI joint.

8. A patient has weak great toe extension and numbness on the dorsum of the foot. Which root is most likely involved?

A. L4
B. L5
C. S1
D. L3

B. L5 L5 supplies the lateral leg, dorsum of the foot and great toe, and its key muscle is the extensor hallucis longus.

9. A patient is steady with eyes open but sways and nearly falls with eyes closed. What does this indicate?

A. A cerebellar ataxia on the left
B. A normal finding for most adults
C. A vestibular nerve palsy only
D. A proprioceptive or sensory ataxia

D. A proprioceptive or sensory ataxia Romberg tests proprioception. Cerebellar ataxia is unsteady even with eyes open.

10. Which statement about SnNout is correct?

A. A highly specific test that is negative helps rule a condition out
B. A highly sensitive test that is positive helps rule a condition in
C. A highly sensitive test that is negative helps rule a condition out
D. A highly specific test that is positive helps rule a condition out

C. A highly sensitive test that is negative helps rule a condition out SnNout: sensitive, negative, rules out. SpPin: specific, positive, rules in.

Cram sheet

Everything from chapters 5 and 6 in one place. Cover the right column and see if you can rebuild each row.

History habits

Item	The rule	Note
Door card	Who, what, task, data	Three to five hypotheses, one must not miss
Opening	Hygiene, name and role, two identifiers, preferred name, comfort, consent, agenda	Agenda question surfaces hidden worries
Funnel	Open, OPQRST plus associated, discriminating, closed red flags	Let the opening statement finish
Wording	Closed and neutral is fine	Leading and stacked questions are not
Cues	Pick them up at once	"My dad had something like this"
Seven families	Cancer, infection, fracture, cauda equina and cord, vascular, visceral, medications	Every spinal case
Cauda equina	Saddle, bladder, bowel, sexual, both legs, weakness	One item at a time
Dissection	5 D's and 3 N's plus ataxia	Referral, not treatment
SNOOP	Systemic, neurological, onset sudden, older, pattern change	Headache red flags
Flags	Yellow, blue, black, orange	Psychological, work, system, psychiatric
Summary	Positives, negatives aloud, concerns, accuracy check	Then explain, drape, consent

Examination numbers

Item	Value	Note
BP categories	Under 120/80; 120 to 129; 130 to 139 or 80 to 89; 140 or 90	Normal, elevated, stage 1, stage 2
Crisis	Over 180 and/or 120	Symptoms: emergency services
Cuff	Bladder 80% around, 40% wide	Lower edge 2 to 3 cm above crease
Deflation	2 to 3 mmHg per second	Phase I systolic, phase V diastolic
Arm difference	Over 10 to 15 mmHg	Subclavian or aortic disease
Pulse	60 to 100	Full minute if irregular
Respirations	12 to 20	Count while holding the pulse
Fever	100.4°F (38.0°C)	Infection screen
SLR	35 to 70 degrees	Radiating pain below the knee
Chest expansion	Under 2.5 cm	Ankylosing spondylitis
Schober	Under 5 cm increase	Reduced lumbar flexion
Strength	0 to 5	3 against gravity only
Reflexes	0 to 4+	2+ normal; reinforce before calling absent
Likelihood ratios	LR+ over 5 to 10; LR minus under 0.1 to 0.2	Meaningful shift

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