

Shoulder, Knee, and Spine Exam

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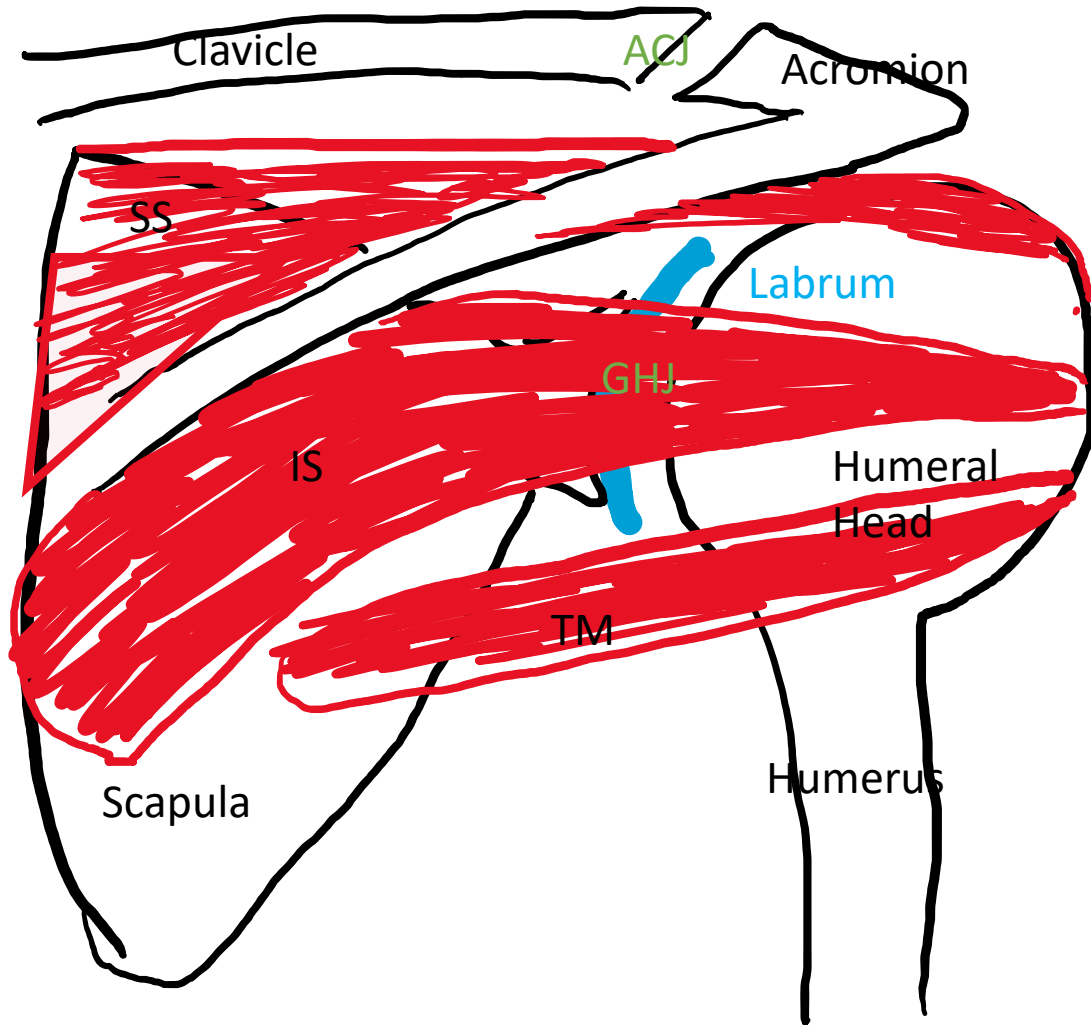
Disclosures

- No Disclosures
- Disclaimer: I am not a spine expert

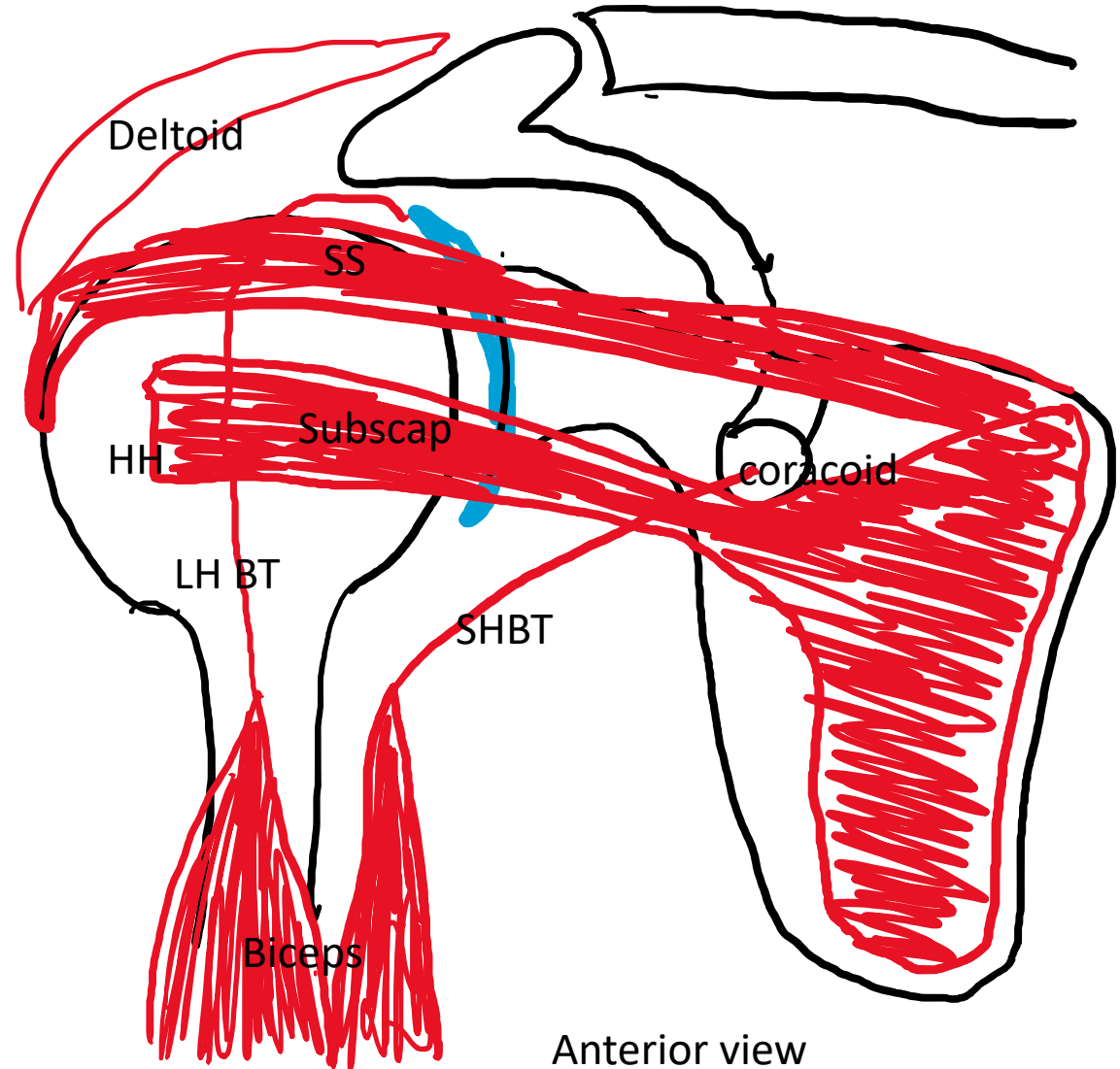
MSK Exam- Basics

- Inspection
- Palpation
- Range of Motion
- Strength/Neuro
- Special Tests

Shoulder Anatomy



Posterior view



Anterior view

Shoulder Exam

- Inspection-
 - Deformity (Shoulder Dislocation, effusion, AC separation, Clavicle Fracture)
 - Bruising (possible fracture or tendon tear)
 - Erythema (Infection)
 - Scapula motion
- Palpation
 - Have a System!
 - Mine is SC → Clavicle → AC Joint → Bicipital Groove → GH joint (anterior and posterior) → Greater Tuberosity → Spine of the Scapula → musculature above and below spine
- Range of Motion
 - Abduction 0-180
 - Forward flexion 0-150
 - IR 0-90 degrees
 - ER 0-90 degrees
 - Extension 0-45 Horizontal abduction 0-130
- Strength
 - Abduction
 - Empty can test isolates supraspinatus
 - IR
 - Subscapularis (Lift off test)
 - ER
 - Infraspinatus/Teres Minor

Shoulder Exam- Special Tests

- Rotator cuff Impingement
 - Neer's
 - Hawkin's
 - Empty Can
- Instability
 - Sulcus Sign
 - Apprehension Sign
- Shoulder Labrum
 - O'Brian's Test
 - Crank Test
- Biceps
 - Speed's
 - Yergason's
- AC Joint
 - Cross Arm test
- Cervical Spine
 - Range of Motion
 - Bony Tenderness
 - Spurling's Test

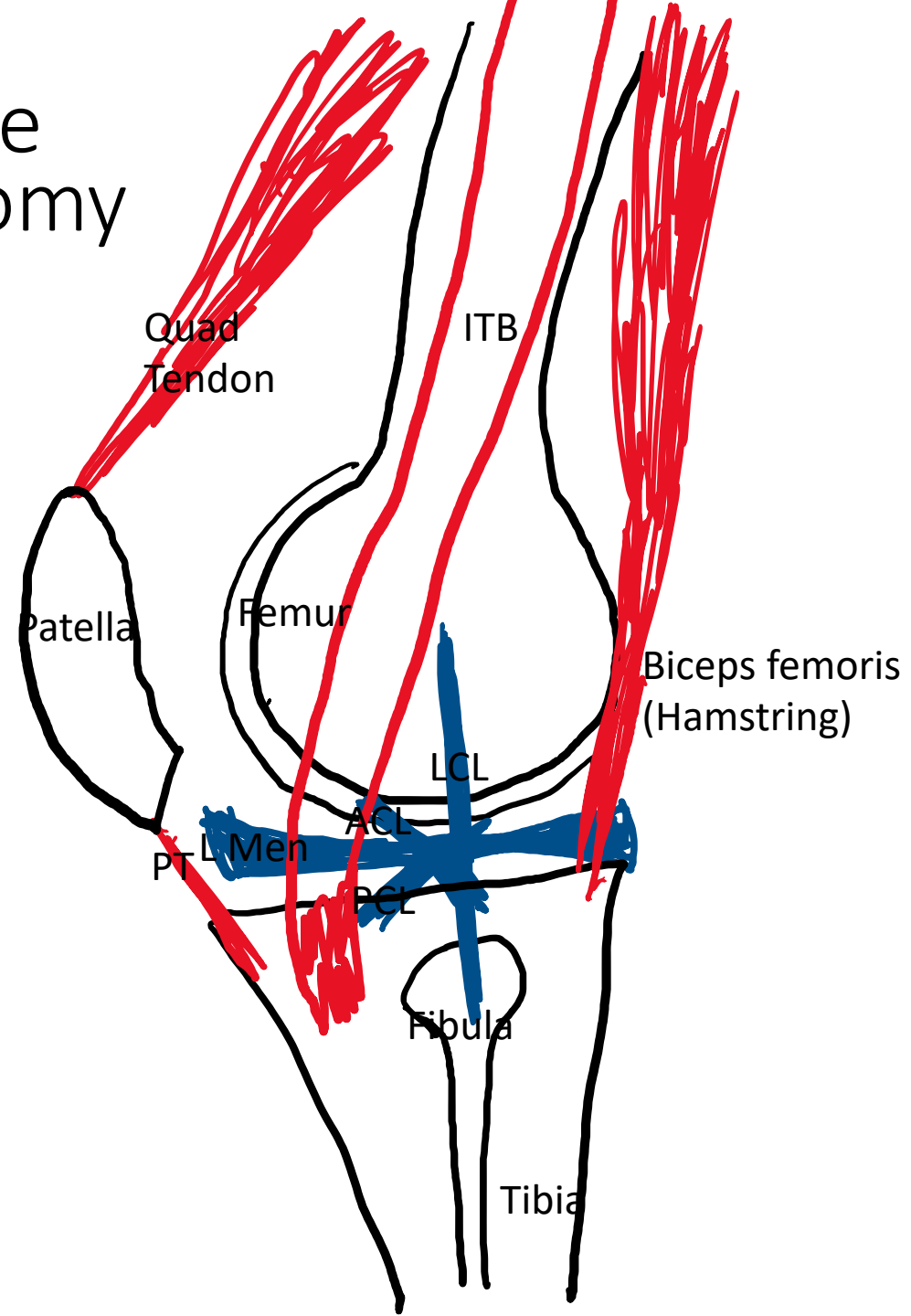
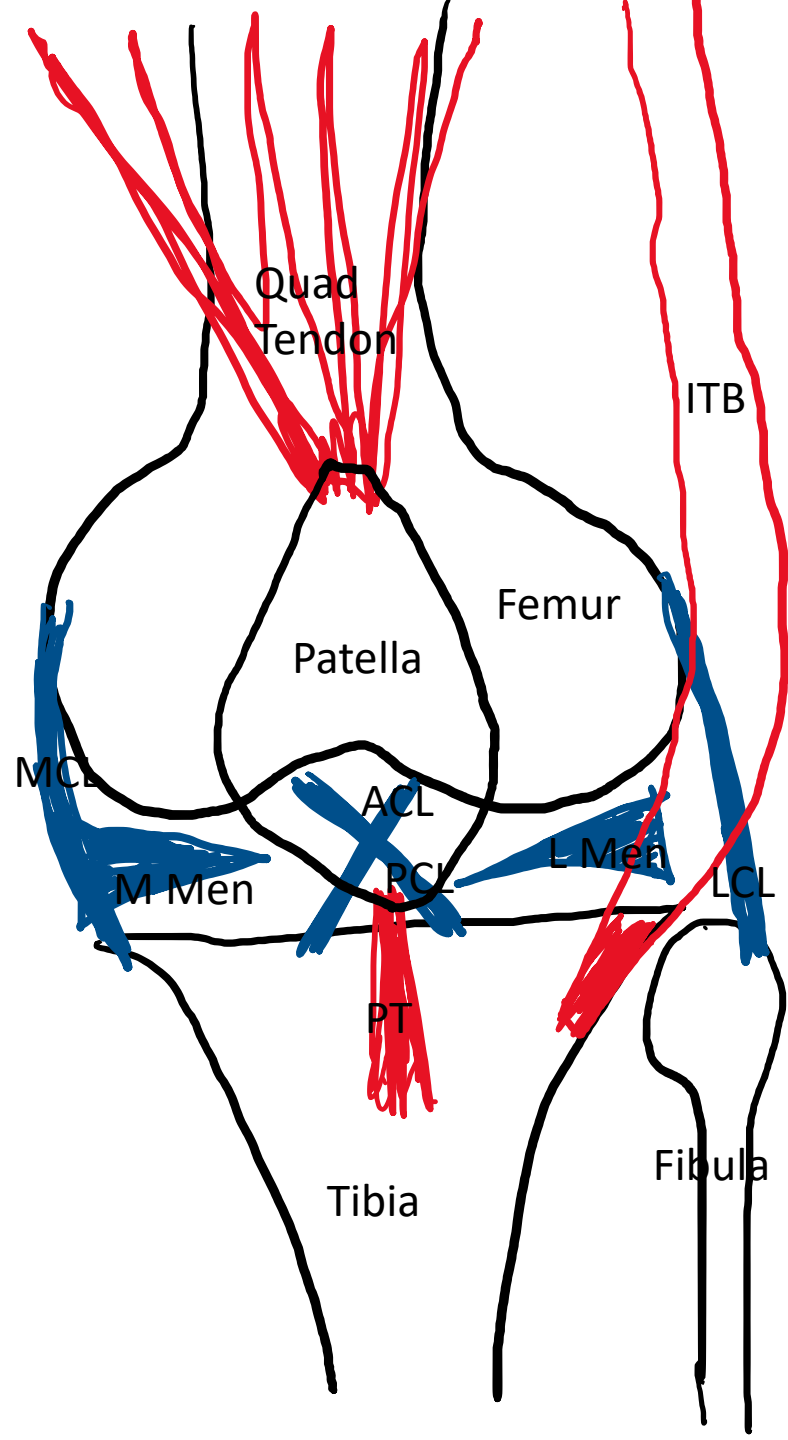
Shoulder Exam- Special Tests

Assessment finding		What is a positive finding?	Sensitivity	Specificity	LR–	LR+	Accuracy
<i>Impingement</i>							
Subacromial: Jobe + Hawkins + Neer + Painful arc + resistance ER		Pain, cut off 3/5 +	75	74	0.34	2.93	79
<i>Rotator cuff pathology</i>							
Full can test	Weakness and pain: tendinopathy/tear supraspinatus		59–89	54–82	0.2–0.5	1.6–3.2	65–74
Lift-off test (Gerber) + resistance IR	Weakness: tear subscapularis		50	88	0.56	4.1	97

Shoulder Exam- Special Tests

<i>Instability</i>						
Apprehension	Apprehensive feeling	98.3	71.6	0.02	3.46	81.7
Sulcus	↑ translation humeral head inferiorly	28-72	86-97			
<i>Slap and biceps related pathology</i>						
Apprehension AND Speed AND O'Brien	Pain	25	92	0.82	3.13	
Speed	Pain: LHB pathology	54	81	0.58	2.77	72
O'Brien	Pain: SLAP	61	84	0.47	3.83	72

Knee Anatomy



Knee Exam

- Inspection

- Deformity (patellar dislocation, quad or patellar tendon tear)
- Effusion (Intra-articular injury, RA, OA)
- Erythema (Infection)
- Bruising (tendon tear, fracture)

- Palpation

- Quad tendon → Patella → Patellar Tendon & insertion
- Med Fem condyle → MCL → medial joint line → → Tibial Plateau → Pes Anserine bursa
- Lat Fem condyle --> LCL → Lateral Joint line → Tibial Plateau
- Popliteal fossa
- Palpate for Effusion
- Palpate during ROM for Crepitus

- Range of Motion

- 0-130 degrees

- Strength

- Flexion
- Extension

Knee Exam- Special tests

- Ligaments

- ACL
 - Lachman's
 - Anterior Drawer
- PCL
 - Posterior drawer
 - sag sign
- MCL
 - Valgus testing at 0 and 30 degrees
- LCL
 - Varus testing at 0 and 30 degrees

- Patella

- Patellar apprehension (Instability)
- Patellar Grind (PFS, PF OA)

- Meniscus

- McMurray's
- Thessaly's

Knee Special Test Exams

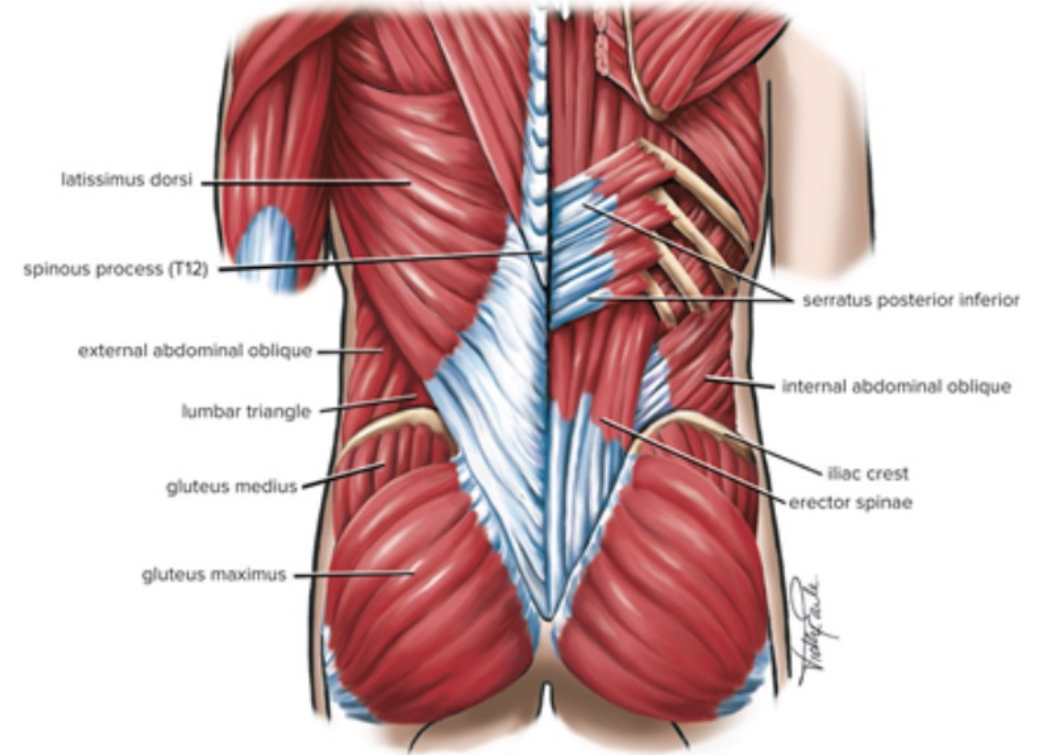
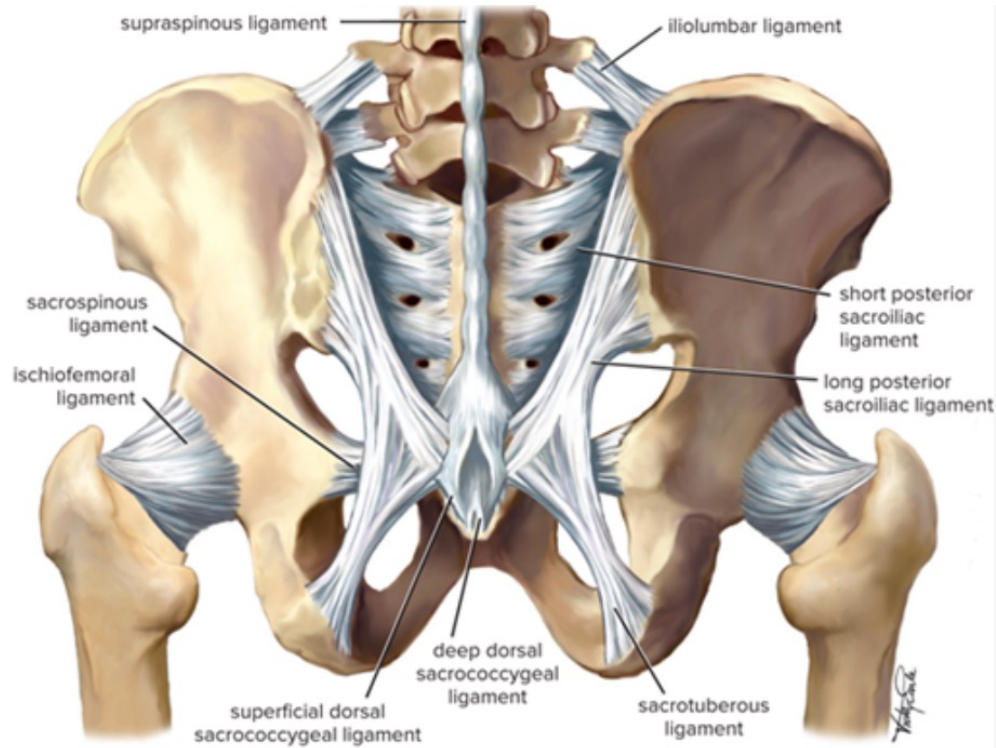
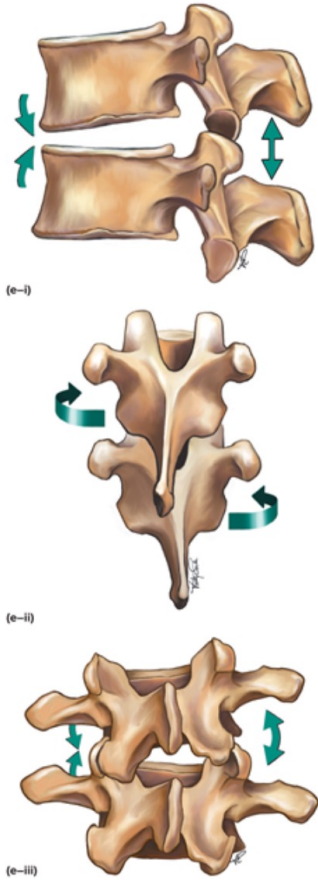
ACL injury		Sensitivity	Specificity	+LR	-LR
Lachman's test	Soft end feel for tibial translation	81	81	4.5	0.22
Anterior drawer	>5 mm anterior tibial translation	38	81	4.5	0.67
PCL injury					
Posterior drawer	>5 mm posterior tibial translation	22–100	98	50.1	0.11
Posterior sag sign	Posterior sagging of tibia	46–100	100	88.4	0.28

Knee Special Test Exams

MCL injury		Sensitivity	Specificity	+LR	-LR
Valgus stress test at 30°	Pain	78	67	2.3	0.30
	Laxity	91	49	1.8	0.20
LCL injury					
Varus stress test at 30°	Pain/laxity	NA	NA	NA	NA
Meniscal tear* Primary Care Specific					
McMurray's test	Palpable or audible click or pain	58	56	1.33	0.74
Joint line tenderness	Reproduction of patient's pain	77	26	1.04	0.89
Thessaly's		66	39	1.08	0.87

Lumbar Spine Exam

Lumbar Spine Exam- Anatomy



Epidemiology and History

- Low back pain common – 85% of population will have during their lifetime
- 20-30% will develop persistent, disabling back pain
- 1-2% may be serious pathology (malignancy, infection, inflammatory disorders)
- 5-10% with specific/definitive diagnosis
- Complex, multifactorial
 - Extrinsic factors (Activity/injury)
 - Intrinsic factors (posture, weight)
 - Lifestyle
 - Psychosocial Factors
 - Cognitive Factors
 - Emotional Factors
 - Social Stressors
 - Neurophysiological Factors

Lumbar Spine exam

- Inspection
 - Watch the patient walk! – antalgic gait, Trendelenburg gait
 - Look for scoliosis, iliac crest height symmetry, deformity, redness, etc
- Palpation
 - Spinous processes, transverse processes, facet joints
 - SI joints
 - Gluteus Medius origin
 - Paraspinal muscles, quadratus lumborum
 - Coccyx

Lumbar Spine Exam

- Range of Motion
 - Forward Flexion- Normal 80-90 degrees- May increase disc pain
 - Extension- Normal 20-30 degrees- may increase facet pain
 - Lateral lean/bend 20-30 degrees in each direction (may increase muscle pain)
 - Twisting 30-40 degrees in each direction (may increase muscle pain)
- Strength Testing
 - Heel walking (L4)
 - Toe walking (S1)
 - Resisted Great toe Dorsiflexion (L5)
- Neuro
 - knee reflex- L4
 - Ankle reflex- S1

Spine Exam- Special Tests- Disc Herniation

- Straight leg raise
- Slump Test



(a)



(b)

Source: Peter Brukner: *Brukner & Khan's Clinical Sports Medicine: Injuries*, Volume 1, 5e; www.mhmedical.com
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Straight leg raise (a) Patient lies supine. The examiner places one hand under the Achilles tendon and the other above the knee. The leg is lifted perpendicular to the bed with the hand above the knee, preventing any knee flexion (b) Dorsiflexion of the ankle is added. Eversion and toe extension may sensitise this test further. Other variations can be added (Table 15.1)



Slump test (a) Patient slumps forward and overpressure is applied. The sacrum should remain vertical (b) Patient is asked to put chin on chest and overpressure is applied (c) Patient actively extends one knee (d) Patient actively dorsiflexes the ankle and overpressure may be applied (e) Neck flexion is slowly released. Steps (d), (e) and (f) are repeated with the other knee. Other variations can be added (Table 15.1)

Spine Exam - Special Tests- Disc Herniation

Test	What is a positive finding?	Sensitivity	Specificity	LR+	LR-
<i>Lumbar disc herniation with radiculopathy</i>					
Sensory deficits	Altered or reduced sensation on side of suspected radiculopathy	40	59	1.1	0.93
Motor paresis	Altered or reduced strength on side of suspected radiculopathy	22	79	1.1	0.96
Reflex deficits	Altered or reduced reflexes on side of suspected radiculopathy	29	78	1.3	0.87
Passive straight leg raise	Pain below the knee at any angle	92	28	1.3*	0.28*
Slump test	Reproduction of radicular pain	84	83	4.9	0.19

Spine Exam- Special Tests- Spondylitis

Single leg extension test (Stork Test)



Single-leg hyperextension test	Pain in lumbar spine	50-73	17-46	0.7-1	1.0-1.5
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Spine Exam- Special Tests- SI joint

1. Gaenslen's torque test



(i)

2. Patrick's test (FABER)



(j)

3. femoral shear/thigh thrust test



(k)

4. distraction test



(l)

5. compression test



(m)

6. sacral thrust test



(n)

- active straight leg raise test



(o)

SI Joint Special tests- Sensitivity, specificity, +LR, - LR

<i>Sacroiliac joint special tests</i>				
Gaenslen's torque test	0.50	0.77	2.21	0.65
Patrick's test (FABER)	0.40	0.99	NA	NA
Femoral shear/thigh thrust test	0.88	0.69	2.80	0.18
Distraction test	0.60	0.81	3.20	0.49
Compression test	0.69	0.69	2.20	0.46
Sacral thrust test	0.63	0.75	2.50	0.50
Active straight leg raise test	0.58	0.97	NA	NA
Van der Wurff cluster (3 or more +ve from tests 1, 2, 3, 4, 5)	0.85	0.79	4.02	0.19
Laslett's cluster (2 or more +ve from tests 3, 4, 5, 6)	0.88	0.78	4.00	0.16

Questions?

Thank-you!



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