

# *Knees and Shoulders:*

## *Focused Joint Exams*

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### Practice point...

The minimal amount of knowledge to intelligently assess a joint is to understand the articular space(s) and the movements about the joint. With just simple anatomy and a basic exam, the physician will be able to diagnose and manage the vast majority of musculoskeletal injuries.

### Point #1

The keys to a focused exam are:

1. Obtain a precise history with an emphasis on the mechanism of injury. You'll be surprised how much the patient will remember if you insist on knowing how the accident happened, for example:
  - A beginner skier falls forward while getting off a chairlift: Medial collateral ligament (MCL) sprain
  - A basketball player has a twisting injury on his planted foot: Meniscus +/- anterior cruciate ligament (ACL) injury
  - A football player falls forward onto his shoulder with his arm at his side: Acromio-clavicular (AC) joint injury
  - A file clerk falls off a step-ladder with her arm abducted: G-H subluxation/dislocation
  - Throwing or other overhead motion injuries: Rotator cuff or labral injury
2. Categorize the injury and perform your exam in consequence. Detailed knowledge of individual muscles and their movements are not necessary for a GP, however, one must be familiar with the joints and their basic movements.
3. Perform serial exams. One doesn't need to get a precise diagnosis on the first visit (especially in the days following an injury), as long as they rule out fractures. Soft tissue pathology will become much more obvious when the swelling, spasm and secondary traumas dissipate. Nevertheless, one should be able to have a differential and advise the patient on initial management, or they will seek another doctor to get their diagnosis.



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### Shoulder

In the shoulder, there are three joints—the gleno-humeral, acromio-clavicular and scapula-thoracic “joint” (the scapula against the rib cage; rarely a primary source of pathology).

### Point #2

For diagnostic purposes, the shoulder can be divided into three areas:

1. The sub-acromial space below the acromion and superior to the humeral head—this is the region where rotator cuff tendinosis, impingement and bursitis are found.
2. The gleno-humeral joint—if the head of the humerus moves extensively on the glenoid fossa, there is joint laxity, which, in more extreme forms, results in subluxations and dislocations.
3. The acromio-clavicular joint—AC sprains or shoulder separations, as well as arthritis and distal clavicular osteolysis, occur here.

### Practice point...

Remember when ordering a test to answer this question—will the result of the test change the management?

### Point #3

Keep the above-mentioned shoulder areas in mind while performing a shoulder exam. The five-minute shoulder exam consists of:

- Neck—flex, extend (don't forget that shoulder pain may radiate from the neck)
- Inspection—AC, dislocations, deformities
- Full abduction—active (includes the painful arc, an active impingement test)
- Forward flexion—(active) with an overpressure by the examiner (the Neer's or passive impingement test)
- Hawkins—passive internal rotation of the humerus with the shoulder flexed at 90°
- Active resisted movements—abduction, external rotation, internal rotation, flexion
- AC tests—palpation to site, scarf test (horizontal adduction)
- Apprehension test in sitting or standing position (abduction/external rotation)—if the test is positive, repeat in a supine position and add the relocation test (push with palm on anterior aspect of the shoulder)
- Sulcus sign for general laxity—gentle downward distraction of the humerus with the patient in a sitting or standing position will create a sulcus or depression just below the acromion
- Other tests—labral, thoracic outlet, *etc.*

### Knee

The knee also has three joints. For diagnostic purposes, these joints can be the framework from which to make your diagnosis.

### Point #4

The knee can be divided into the following categories:

1. The tibiofemoral joint, including the four main ligaments of the knee and the menisci
2. The patellofemoral structures, including the distal quadriceps tendon, the patella, the patellar tendon, tibial tubercle (site of Osgood Schlatter's), pre-patellar bursitis, distal iliotibial band and pes anserine insertion.
3. The proximal tibiofibular joint and lateral tib-fem joint—when examining in and around this area, keep in mind the following structures:
  - the lateral collateral ligament,
  - the lateral meniscus,
  - the tibiofibular ligament,
  - the biceps femoris insertion and
  - the common peroneal nerve.

### Point #5

The five-minute knee exam consists of:

- Inspection—effusion, swelling, redness, scars
- Range of motion—active, then passive
- Ligament testing—ACL (Lachman, pivot); posterior cruciate ligament (Lachman, sag); MCL, lateral collateral ligament (palpation, valgus, varus stresses)
- Meniscus—McMurray's, squat test positive in full flexion, joint line tenderness
- Patello-femoral syndrome tests—palpation, grind, resisted extension, squat test (positive as the patient rises up), patellar apprehension test, patellar dislocation
- Palpation—pes anserine, popliteal fossa, iliotibial band insertion on inferolateral knee

### Other tests to consider...

- Hip exam, especially internal and external rotation (for referred pain)
- Modified Thomas test (one knee to chest, other hanging off table to test for flexibility of ITB, rectus femoris and hip flexors)
- Pes anserine (resisted adduction, knee flexion and resistance of sartorius muscle from the Tailor position; palpation at insertion of the three pes muscles)
- Other ligament and meniscus tests (anterior and posterior drawer, Apley's)
- Proprioception (balance on one leg)
- Biomechanic evaluation (check for genu varus, valgus and foot pronation or supination if recurrent or long-standing overuse injuries)

ITB: Iliotibial band

**Practice point...*****What is the goal of the patient?***

It is imperative that you ask the patient how the particular problem is affecting him/her (at work or at play) and what are his/her goals. Rehabilitation needs to take into account the needs and desires to return to certain activities.

**Point #6**

Management principles include:

- Rule out fractures using whatever system you are comfortable with (*e.g.*, Ottawa ankle and knee rules). Tumours and infections should also be considered.
- An injured joint should rarely be completely immobilized. Even if you decide to brace or splint, one may remove the apparatus on regular occasions for gentle range of motion exercises.
- Ice and other anti-inflammatory modalities may be used in the initial phases of an injury (which may last weeks). Note that the use and timing of non-steroidal anti-inflammatory drugs (NSAIDs) is currently being debated among researchers. Recommendations for NSAID use may change over the next few years.
- Compression and elevation have value for a lower extremity joint that is swollen and is in a dependent position for much of the day.
- Strengthen the muscles. Simple exercises should be done early in the rehabilitation to avoid disuse atrophy. Suggest strengthening exercises with light weights or using elastic bands (*e.g.*, Theraband)
- Discuss a rehabilitation plan with your patient. The following is a sample progression over four to six weeks for a soccer player with a grade II MCL sprain—flexion and extension exercises; stationary bike; weights (partial squats and knee flexion); easy jogging; light ball play and more aggressive strengthening; sprinting; figure eights; scrimmage and return to game play.
- Discuss alternative or modified activities and training. When seen as part of a rehabilitation process your patient may be receptive to other suggestions. Involve your patient in finding creative solutions.
- Further diagnostic testing may be warranted if there is failure to progress. Remember when ordering a test to answer this question. Will the result of the test change your management? If in doubt as to your diagnosis or if the patient is not progressing, consider referral to a sport medicine physician or orthopedic surgeon.