Direct Joint Challenge

For receptor abnormalities
Receptor abnormalities

May evolve from a host of injuries:

May be part of a failed healing syndrome caused by metabolic imbalances, too liberal use of icing and/or other pain and inflammation controlling substances.

Or, due to repetitive minor injury following a primary injury that keeps the injury circuitry active.
Muscle lesions

1. As noted from other discussions, pain in any joint should be evaluated on several levels.
   a. Muscular
      - Golgi tendon, neuromuscular spindle cells, fascia and trigger point lesions.
      - Old muscle tears that have become fibrotic and influence any of the above.
Soft tissue lesion challenge

Muscle lesions may be challenged with active or passive patient participation

Tendon lesion challenge must be made with active patient participation

Joint receptor challenge must be made with passive patient participation.
The spindles fire into the same part of the medulla as do the joint receptors. The quantity and quality of the information entering the cord is rapidly evaluated and whoever has the greatest amount of information...wins.
Pain and ROM with time

- A: Acute
- B: Early Sub-Acute
- C: Late Sub-Acute and Chronic
Range of motion and injury status
The subacute healing stage

Clinical signs
The signs of inflammation progressively decrease and eventually are absent. When testing ROM, the patient experiences pain synchronous with encountering tissue resistance at the end of the available ROM (Figure 6-3B).
The chronic stage

This is where medicine says... ’Well, the joint has been sprained. It will never be the same.’

What is the primary treatment for this today?
Exercise following peripheral joint injury....

• Exercise the muscles surrounding the joint...
  – Why?

• Proprioceptor training....is this a misnomer?

• What, in effect, do these do?
The Classic Ligament Interlink

• Goodheart found that double TL; one to the symptomatic joint and the other to the reactive joint would weaken a strong indicator muscle.

• Therapy was made by manipulating the reactive joint while Tling the involved joint and manually moving the hyoid bone to the side of manipulation.
Ligament challenge

Ligamentous
- Passive stretch of the ligament with muscle weakness only to muscles acting on same side or indirection of stretch.
The joint capsule

Capsular

Passive stretch of capsule causes global muscle weakness response to the muscles acting on that joint.
Discs, cartilage and mensici

Articular Cartilage and/or Meniscal
- Passive articular or meniscal grind causes global weakness of the surrounding muscles acting on that joint.
The advanced AK joint receptor diagnosis

To do this you must become very good at muscle testing. Improper or garbage dump muscle testing will not serve anyone. You will most likely come to a false conclusion, an incorrect therapy and possibly lose a valuable patient as well.
For learning purposes, test all muscles surrounding the joint in question first, before jumping to the receptor challenge evaluation.

If no muscles respond to initial testing, there are several directions one may follow depending upon the history and symptom picture.
   a. If a traumatic incident is the cause.
      ✓ Begin specific joint tissue challenge.
Basic principles with joints

1. If any joint is lesioned, muscle weakness of one or more muscles surrounding the joint must be the result.

2. Failure to demonstrate muscle weakness must create doubt as to the true mechanical nature of the disability.
   a. Adverse proprioceptor stimulus of a joint will cause muscle weakness singularly or globally of the muscles acting on that joint.
The joint proprioceptor challenge

• It is a novel concept
• Based on normal orthopedic tests and very specific muscle testing
Guidelines to receptor challenge techniques

I. Preliminary Joint Workup

1. Test the major muscles directly influencing the joint being examined.
   a. Locate and treat any cause of local muscle weakness.
   b. Muscle/tendon evaluation is made ACTIVELY, not passively.
   c. The passive challenge during examination for ligamentous, capsular and cartilaginous lesions must be made WITHOUT the patient contracting the muscles during the challenge procedure. Muscle contraction will negate the test.
Ligaments weaken individual muscles acting on the joint and that insert close to the ligament in question.

- A positive lateral collateral ligament strain test to the knee will tend to weaken the tensor fascia lata, biceps femoris and, sometimes, the gluteus maximus (due to its insertion into the posterior aspect of the fascia lata).
- If the medial strain test is positive the muscles acting on the area that will tend to weaken are: sartorius, gracilis, adductors and, sometimes, if the sprain is posterior enough, the semi-membranosis and tendinosis muscles.
Extension = anterior fibers
Flexion = posterior fibers
External rotation will primarily stretch the superior fibers.
Inferior fibers of the glenohumeral ligament
Subscapularis weakness indicates involvement
The joint capsule

Notes on the Capsular Challenge
a. Capsular challenging will vary somewhat according to the joint being examined, due to the variations in capsule orientations from joint to joint. The basic procedure, though, remains the same.
The capsule will weaken muscles in a totally different pattern

c. Capsular challenges will also stimulate the ligaments. Differentiation is made secondary to the resulting muscle reaction.
   i - It cannot be more simple. The capsule will weaken ALL the muscles acting on the joint and the ligament will not.
Patient’s must NOT help!!!
Stretching considerations

As with the ligaments surrounding the joint, adequate stretching of the capsule depends upon the position of the arm, rotational component and directional pressure by the examiner. In this respect, internal rotation of the humerus aids in tightening the capsule allowing for a movement of less amplitude in order to create a stretch of sufficient character to stimulate the indicated fibers.
The joint capsule

Start with a general inferior pull to stretch the capsule.

This will be followed by specific directional stretching patterns.

Contact at the wrist is to make sure the patient remains relaxed.
Test several different muscles for adequate confirmation of challenge
Pain during the challenge may alter the test results.

Some caution should be used with the orthopedic challenge so as to reduce the possibility of provoking pain during the test, which may produce a false-negative result. Although one must assume that pain is an indication of dysfunction.
Use pain and tenderness as a confirmation

i - Palpable tenderness (sometimes exquisite) should be able to be elicited over the lesioned portion of the capsule.

ii - This tenderness must become significantly reduced (within a period of about 30 seconds) after the patient is allowed to relax the musculature about the joint.

   nb. The short rest period permits the central integrative state of the CN system to "reset" itself. Thus, the awareness of pain is no longer noted upon palpation unless the reflex is again stimulated by the challenge and immediately followed by the muscle test.
The articular cartilage

• Like the capsule, cartilage responses will cause global weakness patterns.
• Thus, distinguishing between the two is dependent upon the type of challenge made.
cartilage

• Likes to be stroked
• Doesn’t like abnormal or asymmetrical stress during articular movements.
The cartilage challenge will not stimulate the capsule

2. The Articular Cartilage Challenge
   a. Grasping the extremity firmly, the examiner tries to compact the joint in order to approximate the two articular surfaces.
Grinding pressure

b. With the surfaces approximated, the examiner moves the extremity about as if trying to "grind" the two surfaces together in a rotary fashion.
i - The effort is quite like using a mortar and pestle to grind some herb in cooking.
Immediately following “grinding”

• Test the local muscles for global weakening.

• If there is no moveable disc or cartilaginous structure involve, the positive finding will always indicate the need for metabolic intervention.
Lateral to medial view with particular interest in the labrum
Labrum Challenge must be made in a way to distinguish it from the cartilage challenge.

With one hand on the head of the humerus and the other stabilising the scapula and clavicle, the examiner compacts, slightly, the joint and slides the humeral head into the labrum.
Anterior-inferior labrum challenge

Maintain manual compression of the scapula and clavicle.

This and the anterior challenge are the most common positive findings
Posterior labrum challenge
Cartilage grind pressure is applied distally.

Compact the joint and maintain compression of the clavicle and scapula.
Positive articular grind challenge

• Always metabolic in the shoulder unless there has been a significant and severe compaction trauma to the joint.

• No manual treatment will effect the cartilage.

• Local TL is rare.