**TMJ**

**Palpation**

*Mandibular condyle* (particularly lateral pole for collateral ligament)

- **Lateral Condyle**
  - Palpate with mouth closed
  - Palpate posterior to condyle with mouth open
    - assessing posterior ligament complex and posterior synovials
  - Palpate anterior to condyle with mouth open
    - Assessing anterior synovials

**Deep masseter & Superficial masseter**

- **Extra-oral:**
  - Superficial: palpate inferior to zygomatic arch and post/inferior toward angle of mandible and lightly occluded
  - Deep: palpate under posterior zygomatic arch (anterior to condyle) and forcefully occlude
- **Intra-oral:** along inside of cheek, feel anterior border with clenching

**Temporalis**

- **Extra-oral:** palpate one finger-breadth above posterior zygomatic arch
- **Intra-oral:** medial side of coronoid process

**Medial pterygoid**

- **Extra-oral:** along anterior edge of ramus
- **Intra-oral:** at lower medial surface of ramus

**ROM**

**Opening/Closing:** measure vertical distance between tips of upper & lower incisors + vertical overbite or – space between incisors at rest

- Check for deflections (mandible swings to one side during opening and stays to that side to end range) & deviations (mandible tracks to one side during opening but corrects at end range)
- Note when “clicks” occur
- Quality of Motion
  - If AROM is different several times= hypermobile
  - If same motion: specific deviation

**Opening**

- Observe opening
- Measure vertical overbite (or underbite)
- Measure total opening ROM (use the angled edge= more accurate)
  - (+ overbite or – if teeth don’t touch at rest)

**Lateral Deviation:**

- measure between center of upper and lower incisors
  - **Center line**
    - Add to opposite
    - Subtract from same side

**Protrusion:**

- measure horizontal distance between upper and lower incisors + horizontal overbite/jet or – underbite
Joint Mobility

**TMJ distraction/inferior glide**
- Stabilize head in neutral
- Thumb extended over mandibular molars
- Fingers grasping inferior border of mandible
- Index finger on side of jaw
- Distraction is produced with ulnar deviation of the hand (force from wrist - palpate the external joint as you apply force)
- Force is parallel to longitudinal axis of mandible
- Improve all joint motions (good start)

**TMJ distraction with anterior glide (translation)**
- Stabilize head in neutral
- Thumb extended on top of mandibular molars
- Fingers grasp inferior border of mandible
- Index finger on side of jaw (fingers under mandible to bring anterior translation)
- Force is in inferior, anterior, and medial direction
  - Too much force if external palpation falls into the joint
- Distraction with a force towards you (thumb)

**TMJ lateral glide**
- Because part of the motion needed for normal motion
- Can't do actively but part of the motion
- Stabilize head in neutral
- Place thumb on tongue aspect of lower molars (will be the fulcrum)
- Fingers rest around mandible
- Thumb applies force lateral as fingers pull tip of mandible to opposite side (turn a key)
- Force produced by ulnar deviation of the hand (checking joint play-lateral glide needed for full opening)

Special Tests

**TMJ Loading/Bite Test**
- Forced biting on tongue blade/gauze pad caused ↑ intra-articular pressure in contralateral TMJ & distraction at ipsilateral TMJ
- Pain on CONTRA: indicative of joint inflammation on opp side biting
- Pain on IPSI: indicative of superior lateral pterygoid, masseter, temporalis dysfunction (hypertonicity of masticatory muscles)

**Re-trusive Overpressure**
- Grasp chin and press posteriorly and superiorly to load posterior aspect of joint
- Causes compression of retrodiscal tissue or posterior joint structure
- Pain: inflamed posterior structures

**Protrusive Overpressure**
- Press down on anterior aspect of mandible and up on posterior border to load superior aspect of joint
- Rock the chin down and mandible up and forward
- Causes loading of capsule and synovium
- Pain: anterior synovials and joint capsule
Shoulder

Palpation
- Acromion
- Bicipital groove
- Supraspinatus tendon
- Subacromial space
- AC & SC joint

ROM
- Flexion, abduction, ER, IR

Joint Mobility
- Anterior glide
  - Used to restore ER
  - Pt supine (can do prone)
  - Start loose pack position → 60° Abd & 30° forward of horz. Plane
  - Use both hands if needed to apply anterior force (may add slight distraction and or may need to stabilize if patient has excessive laxity)

- Posterior
  - Used to help restore IR (but JOSPT article said that post. glide was more effective than anterior glide in restoring ER in pts with adhesive capsulitis)
  - Supine with arm either abducted 55 degrees and 30 degrees or elbow bent/shoulder flexed to 90
  - Stand facing pts head & with one hand hold elbow/arm (can hold their arm under your arm for more stability)
  - While slightly distracting, use lateral border of other hand to push down and slightly out
  - Alternative way is to put force through patients elbow
  - Be careful if pt has laxity because could cause dislocation

- Inferior
  - Used to help restore abduction
  - Supine with arm in loose pack position
  - Stand facing toward patients feet
  - Position one hand on pts elbow to stabilize and other on humeral head (find acromium and move down to humeral head)
  - Slightly distract arm while pushing down (inferior) and slightly out (lateral)

Special Tests

Neer's Test
- IR arm and then passively move it into max flexion while preventing scapula upward rotation.
  (+) if reproduction of shoulder pain

Hawkins- Kennedy Test
- Sitting with elbow bent to 90 degrees
- Passively flex arm to 90 degrees, then gradually move toward max IR without allowing substitution patterns (i.e. trunk lean away, shoulder hiking)
  (+) if reproduction of pain

Lift-off test
- Tests integrity of subscapularis
- Place patients arm with hand over low back (arm in maximal internal rotation)
- Ask patient to lift hand away from back and then apply resistance to hand
  + test: unable to lift hand away from back and/or resist force
Empty can test
- Tests supraspinatus (used to test for tendonitis or tear)
- Position arm in 90 degrees abduction in scapular plane with thumb down
- Apply downward force and ask patient to resist
- Full can may also be performed
  + test: pain and weakness, indicates supraspinatus pathology

Hornblower’s sign (Patte test)
- Tests infraspinatus and teres minor integrity
- Arm in 90 degrees abduction in the scapular plane with elbow flexed to 90 degrees
- 1st see if patient can hold arm up
- Then patient tries to ER against resistance
  + test: unable to ER against resistance in this position

Drop arm test
- Sitting with pts elbow either at 90 or straight
- Abduct shoulder to 90° and ask the patient to slowly lower the arm to the side
  + test: inability to return the arm to the side slowly or pain (problem ecc. lowering)

Load and shift test in anterior direction
- Used to check for anterior instability
  - Patients sits with arm on leg
  - Stabilize scapula with one hand and push forward and slightly lateral on humeral head
  - Use mostly pressure from thumb to push forward
  - Neutralize humeral head in the glenoid fossa, then “shift” it in an anterior direction
Grading
  - 1+ = humeral head moves up the glenoid slope, but not over the rim
  - 2+ = humeral head moves over glenoid rim; spontaneously reduces back to fossa
  - 3+ = humeral head moves over glenoid rim; dislocation
Normal is 1+ and 2+ ... or up to 50% of humeral head over the glenoid

Load and shift test in posterior direction
- Used for posterior instability
  - Patient sits with arm on leg
  - Neutralize humeral head in the glenoid fossa, then “shift” it in a posterior direction

Anterior drawer test
- Used to check for anterior instability
  - Pt supine with one hand on elbow holding shoulder in neutral
  - 45 degrees abduction and 30 degrees off coronal plane (scapular plane)
    - have them relax arm and find humeral head
    - apply anterior force to humerus
  - (+) test is increase in laxity and less firm endpoint
    - more specific to middle GH ligament
  - 90 degrees abduction
    - in scapular plane
    - apply anterior force to humerus
  - (+) test is increase in laxity and less firm endpoint
    - more specific to IGHL complex
Fulcrum
- Used to check for anterior instability
- Pt supine with 90 degrees abduction
  - allow arm to externally rotate (90/90 position)
  - place one hand at elbow and one on humerus
  - apply anterior directed force to humerus while simultaneously horizontally abd. arm
    should be anterior and toward me: quick test for end feel
- (+) is increase in laxity and less firm endpoint
- more specific to anterior band of the IGHL complex

Posterior drawer test
- Used to check posterior instability
- Pt supine & shoulder in 60 degrees of abd. and 60 degrees anterior to the horizontal plane
- Apply posterior force
- (+) test is increased translation, possibly less firm endpoint

Apprehension test
- Pt supine and start to move into abduction and then gradually move into ER
- Gradually move into 90/90 position
  (+) test is patients feeling that shoulder will sublux or stopping movement because of fear of shoulder subluxating (not pain but apprehension)
- Most likely to be positive in patient that had anterior dislocation

Relocation and Anterior release test (if subluxation or dislocation is suspected)
- Relocation
  - Supine and put arm in 90/90 position
  - apply posterior directed force to humeral head
    (+) is reduction of pain/apprehension
- Anterior release test
  - as above, (+) is pain with release of posterior directed force
*Apprehension, Relocation, and Anterior release test are all slight variations in the same position

Relocation test (for posterior impingement)
- put arm in 90 degrees of abduction and 90 degrees ER
- apply anterior force to humeral head and look for increase in pain
  (+) is reproduction of pain

Sulcus Sign
- Arm is relaxed on the leg
- Apply traction and palpate gap in the subacromial space
- Try to reproduce inferior translation
  1+ = < 1 cm
  2+ = 1-2 cm
  3+ = > 2 cm

O’Brien’s test
- Place arm in 90 degrees of flexion and 10 degrees of horizontal adduction; push down & have pt. resist forward flexion with thumb down (IR) & thumb up (ER)
  + test
- Reproduce pain in thumb down position
- Pain lessens in thumb up position
  - Thumb down looks a lot like Hawkins Kennedy test so if positive in both thumbs up & down more likely subacromial impingement
Biceps load II test

- Patient is supine
- Arm is abducted to 120 degrees and maximally externally rotated with elbow in 90 degrees flexion and forearm supinated
- Resist elbow flexion (active bicep contraction)
+ test is
  - reproduction/increase in pain
  - if can't get 90 degrees of ER because of pain and inflammation → don’t do test

Anterior Slide test

- Patient stands with hands on hips, thumbs to back
- Examiner stabilizes scapula and applies anterior and superior directed force at elbow while patient resists the force (drive humeral head forward and up)
+ test is
  - reproduction of patient’s pain or click

Clunk test

- Patient is supine
- Examiner places one hand on posterior aspect of humerus and the other hand grasps elbow
- Arm is fully abducted
- An anterior force is applied to humeral head while other hand externally rotates humerus
+ test is
  - clunk or grinding sound

Crank test/Compression-rotation test

- Patient supine
- Shoulder is elevated with elbow flexed to 90 degrees
- Apply compression to humerus, then IR/ER and circumduct humerus (little circles or compress and do little rotation)
+ test is
  - catching or clicking

Speed Test

- Arm externally rotated and forearm in a supinated position, resist shoulder and elbow flexion
  - Static: which may elicit more pain if bicep tendonitis
  - Dynamic: have them do upper cut against resistance: better for SLAP
- Some references say position arm in flexion
+ test:
  - pain in biceps tendon

Yergason’s test

- Start with arm by side, elbow flexed, palm down
- Resist supination while patient externally rotates arm
+ test:
  - pain in anterior aspect of shoulder, “popping” of biceps tendon, indicates compromise of transverse humeral ligament

Horizontal (cross-arm) Adduction test

- Horizontally adduct patient’s arm (PT adducts so it is PROM for pt)
+ test
  - localized pain at the AC joint