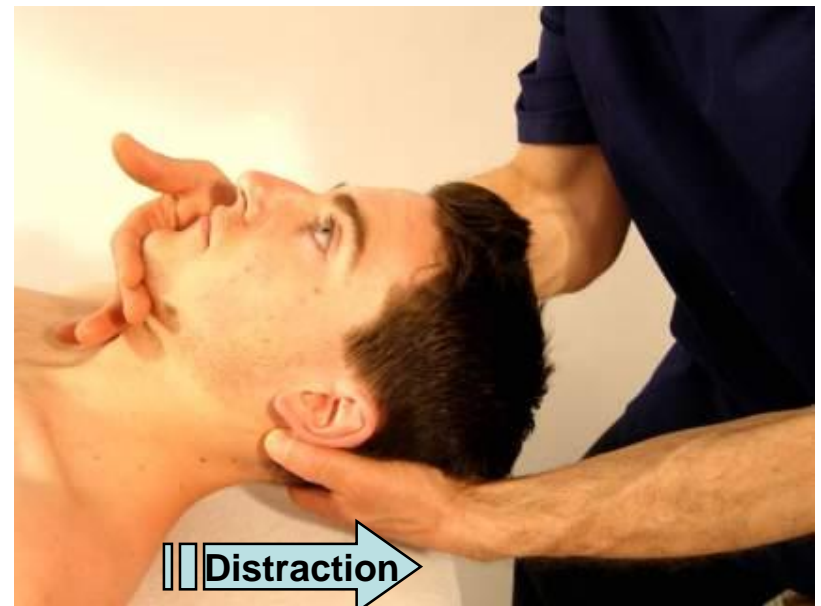


Orthopaedic Evaluative Musculoskeletal Tests

Cervical Spine tests

Cervical Distraction test

1. Test for the presence of nerve root pathology, injury to cervical weight bearing structures or ligaments.
2. The patient is seated.
3. The examiner stands behind the patient.
4. The examiner cradles the patients head at the occiput and mandible. A careful, progressive traction of the patients cervical spine is performed.
5. Observe for relief of pain or radicular symptoms.
6. Positive if pain or radicular symptoms subside. Caused by decreasing pressure on nerve roots. Local pain may also decrease if there is facet impingement.
7. Negative if symptoms do not change or worsen. If increased local pain consider: muscle or ligament strain.
8. Positive test may indicate cervical nerve root compression, irritation or injury to weight bearing structures.



Spurlings Test, Foramen compression test

1. Test for presence of nerve root pathology.
2. The patient is seated.
3. The examiner stands behind patient.
4. The examiner sequentially compresses, extends and then rotates the patients head to the side of the suspected lesion.
5. Observe the patient for pain, or radicular symptoms.
6. Positive if radicular symptoms develop. Negative if symptoms are not provoked.
7. Positive test may indicate cervical nerve root compression or irritation. Local pain may also indicate prolapsed cervical disc, osteophytes or foraminal stenosis.



Axial Cervical Compression

1. Test for lesions to weight-bearing structures, the facets or for nerve root pathology.
2. The patient is seated.
3. The examiner stands behind patient.
4. The examiner places both hands with fingers locked over the patient's head and exerts a gradual compressive force direct through the cervical spine.
5. Observe the patient for pain or undue discomfort or for radicular symptoms.
6. Positive if radicular symptoms develop. Negative if symptoms are not provoked.
7. Positive test may indicate cervical nerve root compression or irritation. Local pain may also indicate prolapsed cervical disc, facet lesion, osteophytes or foraminal stenosis.



Subclavian artery test, Adson's Test

1. Test for presence of thoracic outlet syndrome.
2. The patient is seated.
3. The examiner stands behind patient.
4. The examiner palpates the patients radial pulse, abducts and extends their arm. The patient is asked to look towards the side being tested and to take a deep breath. In Halstead maneuver the Radial pulse is felt as arm is pulled down and back as the patients **neck** is hyperextended and rotated to the **opposite** side
5. Palpate for obliteration of the radial pulse.
6. Positive if pulse diminishes or is obliterated and symptoms are provoked on the upper extremity. Test is negative if radial pulse remains unaffected or symptoms are not provoked.
7. Positive test may indicate thoracic outlet syndrome (compression of neurovascular bundle at the interscalene, costoclavicular or pectoralis sites).



Cervical spinal cord myelopathy test, Lhermitte's test

1. Test for presence of cervical myelopathy.
2. The patient is seated with legs extended on plinth.
3. The examiner stands beside the patient supporting them.
4. The examiner asks patient to flex their neck slowly. Overpressure can also be applied.
5. The patient may report pain of spinal origin (electric-like sensations) into the upper or lower extremities with or without paraesthesias.
6. Positive if pain or dysaesthesia is provoked in the upper or lower extremities. Test is negative if symptoms are not provoked.
7. Positive test may indicate cervical myelopathy due to cervical bar formation, multiple sclerosis or other lesion. May also indicate meningeal irritation.




Shoulder Abduction Test - Bakody's Sign

1. Test for the presence of cervical nerve root irritation.
2. The patient is seated.
3. The examiner stands beside the patient supporting them.
4. The examiner asks the patient to abduct their shoulder and place their hand on their head.
5. The patient may report relief of radicular pain or symptoms.
6. Positive if the patient reports a decrease of radicular pain or symptoms in a dermatomal region. Test may be negative if symptoms are not relieved, however, this depends on the level of irritation.
7. Positive test may indicate cervical nerve root irritation.



Brachial plexus compression test

1. Test for the presence of brachial plexus irritation.
 2. The patient is seated.
 3. The examiner stands beside the patient supporting them.
 4. The examiner palpates firmly over the brachial plexus and instructs the patient to slowly sidebend their head away from the area being palpated.
- 
5. The patient may report increase in radicular pain or symptoms.
 6. Positive if the patient reports an increase of radicular pain or symptoms in a non-dermatomal upper extremity region. Test is negative if symptoms do not change.
 7. Positive test may indicate brachial plexus irritation, however if the symptoms provoked are dermatomal in distribution, there may be a cervical nerve root irritation.

Vertebral Artery Test

1. Test for the integrity of the vertebral arteries
2. The patient is in the supine position
3. The examiner stands at the head end of the plinth
4. The patient is assisted to extend the cervical spine to end of range. Following this, the upper cervical joints are taken into side bending and rotation to the same side. This position is held for up to 30 seconds or until symptoms appear and this case it is stopped
5. Observe the patients eyes for nystagmus
6. Positive if symptoms include vertigo, nystagmus, visual disturbances and light-headedness.
5. Signifies vertebrobasilar arterial insufficiency



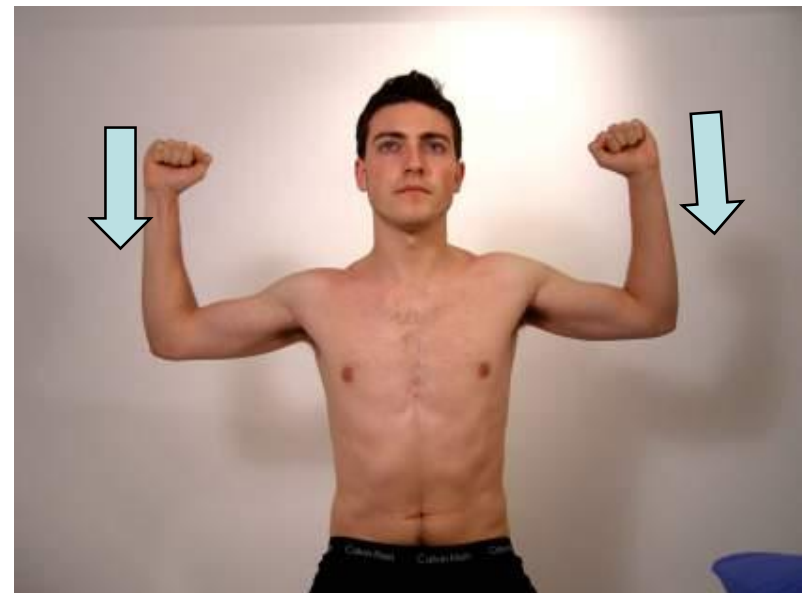
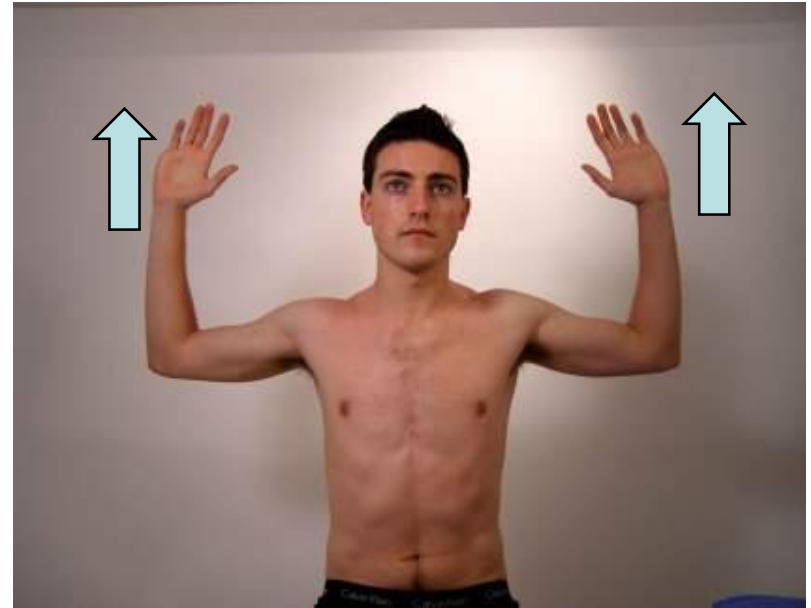
Hautants Test

1. To assess the integrity of the vertebral arteries
2. The patient is seated
3. The examiner stands close to the patient
4. The patient flexes both arms to 90° with forearms supinated. The patient is instructed to close their eyes and tip the head backward. At this point, the patient may report the presence of symptoms. If no symptoms are present, the patient is asked to rotate their head to one side and hold it. If no symptoms are reported after 30 seconds, test the other side.
5. Observe the patient's arms for drifting or general instability.
6. Positive if the patient reports vertigo and dizziness, or the examiner observes drifting of one of the arms. If positive the test is stopped immediately.
5. Signifies compromised arterial supply to the brainstem implicating the vertebral arteries. Also consider the possibility of vestibular disease.



Roos test - Elevated arm test

1. Test for the integrity of the thoracic outlet
2. The patient is seated
3. The examiner observes by standing in front
4. The patient is asked to abduct their arms to 90° and flex their elbows upwards also at 90° (the surrender position). The patient is then asked to repeatedly open and close their fists at modest speed for approximately 3 minutes. Expanding the thorax by taking in a large breath may aggravate the symptoms.
5. Observe for signs of fatigue or a downward drift
6. Positive if the patient shows early fatigue, numbness, tingling, heaviness or a sudden drop of the arms
7. Signifies compromised thoracic outlet affecting the function of the brachial plexus and subclavian artery



Brudzinski's test - Meningeal stretch test

1. Test for irritation to the meninges by placing a stretch through them
2. The patient lies supine
3. The examiner stands next to the patient's head
4. The examiner gradually flexes the patient's head and neck towards the patient's chest.
5. Observe the patient's knees and their face for evidence of pain
6. Positive if the patient involuntarily flexes their hips and knees to lessen traction forces.
7. Signifies meningeal irritation / meningitis



Emulating a positive reaction

Shoulder depression test - Brachial plexus distraction test

1. Test for radiculopathy or brachial plexus lesion.
2. The patient is seated
3. The examiner stands behind the patient
4. The examiner sidebends the neck and depresses the ipsilateral shoulder. This places a detractive force through the nerve roots of the cervical and brachial plexii.
5. The examiner observes the patient for pain
6. The test is positive if the patient reports neurological radiations in the upper extremity. If patients reports only local pain may indicate symptoms of musculo-ligamentous origin.



Thoracic Spine tests

Beevor's sign - Lower thoracic myelopathy test

1. Test for lesions affecting thoracic segments at, or adjacent to T10
2. The patient lies supine
3. The examiner observes by their side
4. The patient is asked to do a slow sit-up attempt by raising the head without support from their hands.
5. Observe the umbilicus to see if it remains at the centre of the abdomen
6. Positive if there is a drift of the umbilicus to one side. This signifies unilateral paralysis of abdominal muscles. If the umbilicus drifts towards the head it signifies paralysis in lower abdominal muscles.
7. May signify spinal cord lesion around T10 or amyotrophic lateral sclerosis



Slump test - Dural adhesion test

1. Test for the presence of neurological irritation of the lumbar meninges or nerve roots.
2. The patient is seated on plinth.
3. The examiner stands beside the patient supporting them.
4. The examiner asks the patient to slump, flexing their cervical, thoracic and lumbar spines. They are then asked about the presence of symptoms. If no symptoms are provoked, the examiner flexes the cervical spine further. If symptoms are still not provoked, the knee is passively extended with the ankle in dorsiflexion.
5. The patient may report increase of radicular pain or symptoms in the spine or lower extremities .
6. Positive if the patient reports an increase of radicular pain or symptoms in the spine and lower extremities. Symptoms often described as shooting or electrical-like sensations.
7. Positive test may indicate nerve root irritation, tethering, disc herniation, radiculopathy or meningeal irritation.



Lumbar Spine tests

Straight leg raise test - Lasegue's sign

1. Test the sciatic nerve and lumbosacral nerve roots for irritation.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner lifts the patients leg from the plinth by holding it at the calcaneum and keeping the knee straight. The hip is flexed up to 90° , if tolerated. The leg should be rotated medially. If no symptoms are provoked the ankle is dorsiflexed thus placing a further stretch on the sciatic nerve. If the posterior musculature is fully tensed then the leg is lowered by 5° before dorsiflexing.
5. The patient may report back pain or radicular pain/ symptoms in the lower extremity.
6. Positive if significant back pain, or radicular pain in the lower extremity is present.
7. Positive test may indicate sciatic or lumbosacral nerve root irritation, for example due to a prolapsed lumbar disc. If leg pain increases but without spinal symptoms consider piriformis syndrome.



Crossed Straight leg raise test

1. Test for the sciatic nerve and lumbosacral nerve roots for irritation
2. The patient is supine.
3. The examiner stands beside patient.
4. The examiner lifts the patients leg from the plinth by holding it at the calcaneum and keeping the knee straight. The hip is flexed up to 90° , if tolerated. The leg should be rotated medially. If no symptoms are provoked the ankle is dorsiflexed thus placing a further stretch on the sciatic nerve. If the posterior musculature is fully tensed then the leg is lowered by 5° before dorsiflexing.
5. The patient may report back pain or radicular pain or symptoms in the opposite lower extremity.
6. Positive if significant back pain, or radicular pain in the opposite lower extremity is present.
7. Positive test is suggestive of a lumbar disc prolapse or other space occupying lesion.

Prone upper lumbar nerve root test / Femoral nerve stretch / Nachlas' test.

1. Test the upper lumbar nerve roots and femoral nerve for irritation.
2. The patient is prone.
3. The examiner stands beside the patient.
4. The examiner flexes the patients knee as far as possible with the patient's heel towards their buttock and enquires about symptom increase. If no provocation occurs the hip is also extended to increase stretch to the femoral nerve
5. The patient may report back pain or radicular pain or symptoms in the posterior or anterior lower extremity.
6. Positive if significant back pain, or radicular pain in the lower extremity is present.
7. Positive test may indicate upper lumbar nerve root irritation, or femoral nerve problems.



Side-lying femoral nerve stretch test

1. To stretch the upper lumbar spine nerve roots and femoral nerve
2. The patient in the side-lying position.
3. The examiner stands behind the patient
4. The patient bends both knees with the symptomatic side on top. The examiner holds the flexed knee and brings the hip into a gradual extension.
5. Observe for pain either due to nerve root or discomfort from the patient hips and knees.
6. Positive if increase in nerve root pain, referral pain in the distribution of the upper lumbar roots, or upper lumbar pain.
7. Positive test may indicate upper lumbar nerve root irritation, or femoral nerve problems.



Slump test - Dural adhesion test

1. Test for the presence of neurological irritation of the lumbar meninges or nerve roots.
2. The patient is seated on plinth.
3. The examiner stands beside the patient supporting them.
4. The examiner asks the patient to slump, flexing their cervical, thoracic and lumbar spines. They are then asked about the presence of symptoms. If no symptoms are provoked, the examiner flexes the cervical spine further. If symptoms are still not provoked, the knee is passively extended with the ankle in dorsiflexion.
5. The patient may report increase of radicular pain or symptoms in the spine or lower extremities .
6. Positive if the patient reports an increase of radicular pain or symptoms in the spine and lower extremities. Symptoms often described as shooting or electrical-like sensations.
7. Positive test may indicate nerve root irritation, tethering, disc herniation, radiculopathy or meningeal irritation.



Kernig's Sign - Meningeal stretch test

1. Test for presence of neurological irritation of the lumbar meninges or nerve roots.
2. The patient lies supine.
3. The examiner stands beside the patient.
4. The patient's hip and knee are flexed to 90°. The examiner then slowly extends the knee with the foot in dorsiflexion.
5. The patient may report radicular pain or a generalised spinal pain and resistance to movement.
6. Leg pain and localised low back pain may indicate radiculopathy. Generalised spinal pain, resistance to the test or involuntary flexion of the opposite hip may indicate meningitis.
7. Positive test may indicate meningeal irritation or nerve root impingement.



Valsalva manoeuvre

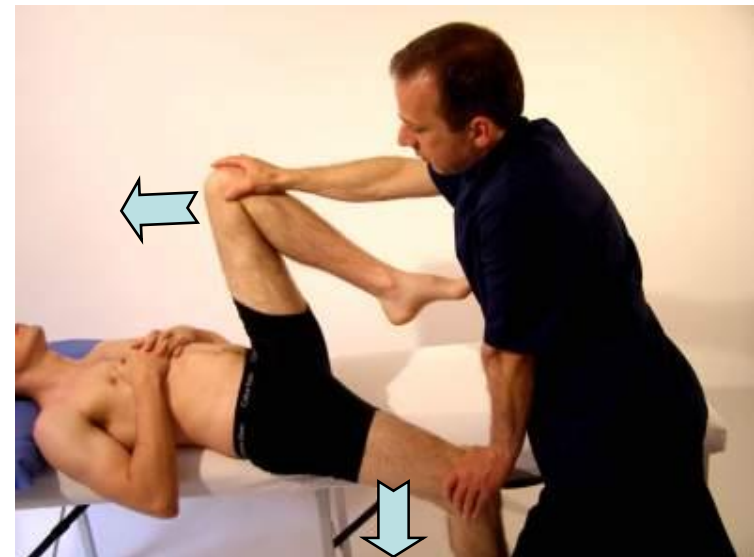
1. Test for raised intrathecal pressure via a space occupying lesion.
2. The patient is seated.
3. The examiner stands beside the patient.
4. The examiner asks the patient to bear down as if moving their bowels. A deep breath and pinching of the nose may further increase the intra thoracic/intra-abdominal pressures.
5. The patient may report back pain or radicular pain and symptoms in the lower extremity.
6. Positive if significant back pain, or radicular pain in the lower extremity is present.
7. Positive test may indicate sciatic or lumbosacral nerve root irritation, for example due to a prolapsed lumbar disc causing raised intrathecal pressure.



Sacro-iliac tests

Sacroiliac stress test - Gaenslen's test.

1. Test for sacroiliac joint dysfunction.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner guides the patients lower extremity off the side of the plinth, extending the hip. The patient or the examiner flexes the opposite leg.
5. The patient may report back pain in the region of the sacroiliac joint. The test is repeated on the other leg.
6. Positive if significant pain in the sacroiliac region develops.
7. Positive test may indicate problems with the sacroiliac joint. May also indicate contracture of iliopsoas muscle or hip problems



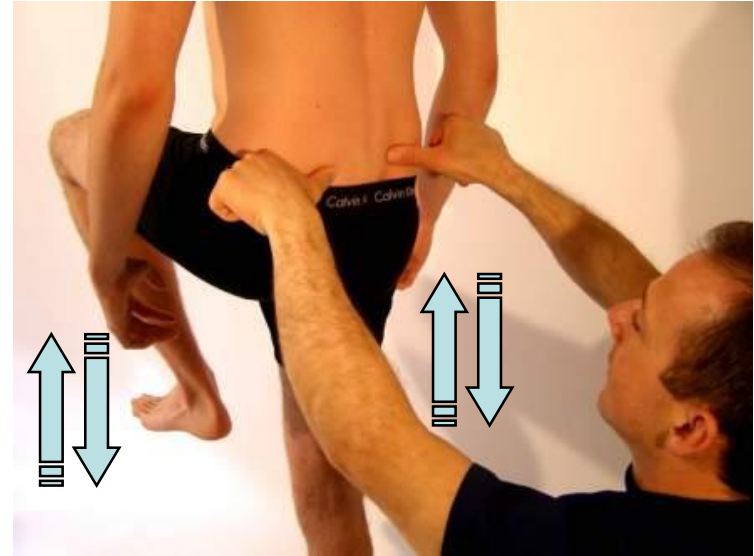
Sacral fixation test - Standing hip flexion

1. Test for sacroiliac joint dysfunction.
2. The patient is standing.
3. The examiner squats behind the patient.
4. The examiner places their thumbs over each PSIS. The patient is instructed to flex one of their hips and knee all the way.
5. The examiner checks to see if the PSIS level on the side of the flexed leg if remains at the same level, or if it drifts downwards. Repeat with the other leg.
6. The test is positive if the PSIS on the flexed side remains at the same place indicating a hypomobile SI joint. Normally the PSIS should drift downwards.
6. Positive test may indicate hypomobility of the sacroiliac joint being palpated.



Gillette's march Test

1. Test for sacroiliac joint dysfunction.
2. The patient is standing.
3. The examiner squats behind the patient.
4. The examiner places their thumbs over each PSIS and S2 tubercle. The patient is instructed to march in place.
5. The examiner checks the motion of the PSIS in relation to the S2 tubercle or the sacrum.
6. The test is positive if there is undue pain or abnormally increased or decreased movement at the sacroiliac joint.



Piriformis side-lying test

1. Test for the presence of piriformis syndrome.
2. The patient is side-lying with the upper most knee flexed to 60°.
3. The examiner stands in front of the patient.
4. The examiner guides the flexed upper leg into adduction and internal rotation. If no symptoms are reported the patient is asked to oppose the movement thus isometrically contracting piriformis. In this position the examiner may also palpate the piriformis for evidence of undue spasm or pain
5. Observe the patient for resistance in placing the flexed hip into adduction and for reported pain.
6. Positive if symptoms are provoked in the lower extremity and, or undue pain in the piriformis area.
7. Positive test may indicate compression of the sciatic nerve by the piriformis muscle. Up to 10-12% of the population have part or whole of sciatic nerve piercing the piriformis.



Piriformis prone test (alternative)

1. Test for the presence of piriformis syndrome
2. The patient lies prone
3. The examiner stands by the side of the plinth
4. The symptomatic side is placed at the edge of the plinth. The patient's knee is flexed fully and the hip flexed to 90° so that the flexed leg is off the plinth. The examiner steadies the pelvis with one hand while the other hand guides a downward and inward force onto knee .
5. Observe the patient for pain or resistance to the movement.
6. Positive if the patient reports pain referral or undue pain at the piriformis muscle.
5. Signifies piriformis syndrome



Sacroiliac distraction test - Gapping test

1. Test for sacroiliac dysfunction and ligamentous instability.
2. The patient lies supine
3. The examiner stands by the side.
4. The examiner fixes on the ASIS and directs an oblique posterolateral force through the ilia. The examiner should adopt the crossed hand position.
5. Observe the patient for pain
6. Positive if the patient experiences pain in the sacroiliac region. May also reveal lesion with the symphysis pubis.
7. Signifies a lesion to the sacroiliac joint and associated ligaments.



Sacroiliac compression test

1. Tests for sacroiliac dysfunction and ligamentous instability.
2. The patient lies supine
3. The examiner stands by the side.
4. The examiner fixes on the ASIS and directs an oblique medial force through the ilia.
5. Observe the patient for pain
6. Positive if the patient experiences pain in the sacroiliac region.
7. An alternative test is the sidelying compression test.



Sacroiliac compression test – side lying

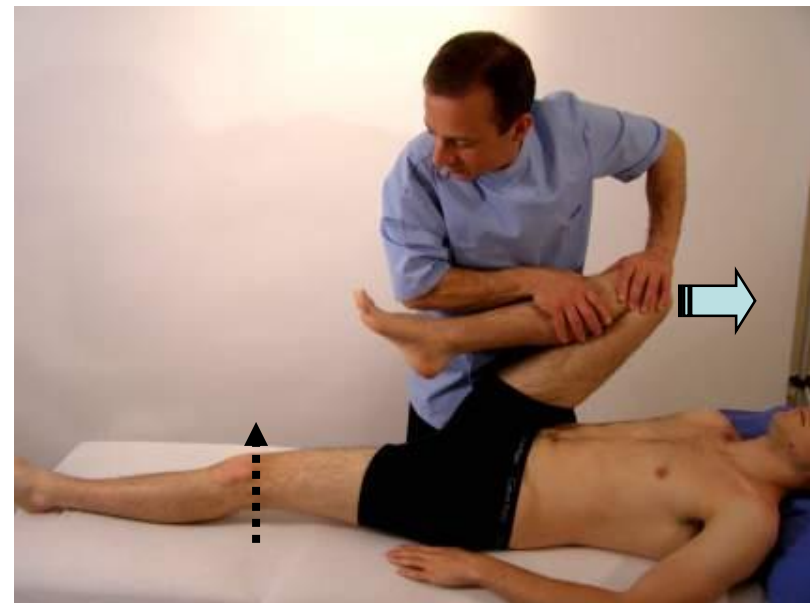
1. Tests for sacroiliac dysfunction and ligamentous instability.
2. The patient lies on their side with knees flexed
3. The examiner stands in front of them.
4. The examiner exerts a compressive force through the ilia using either his forearm or his hand.
5. Observe the patient for pain
6. Positive if the patient experiences pain in the sacroiliac region.
7. The examiner can also palpate over the sacroiliac joint to evaluate its mobility.
8. An alternative test is the supine compression test.



Hip tests

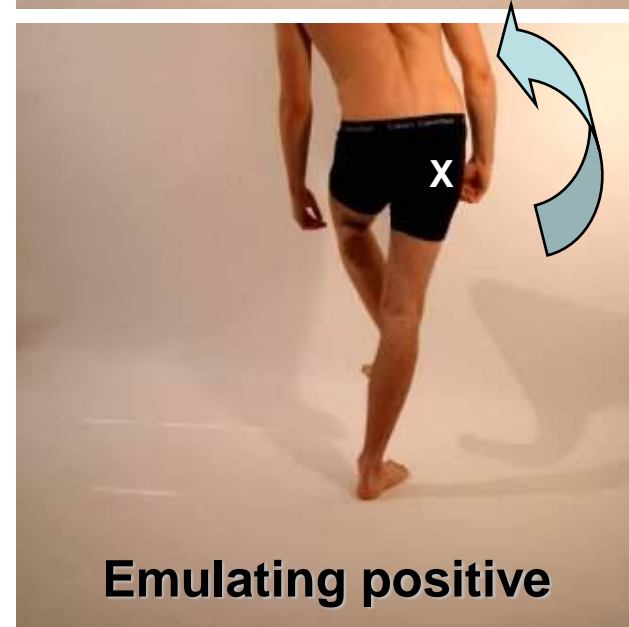
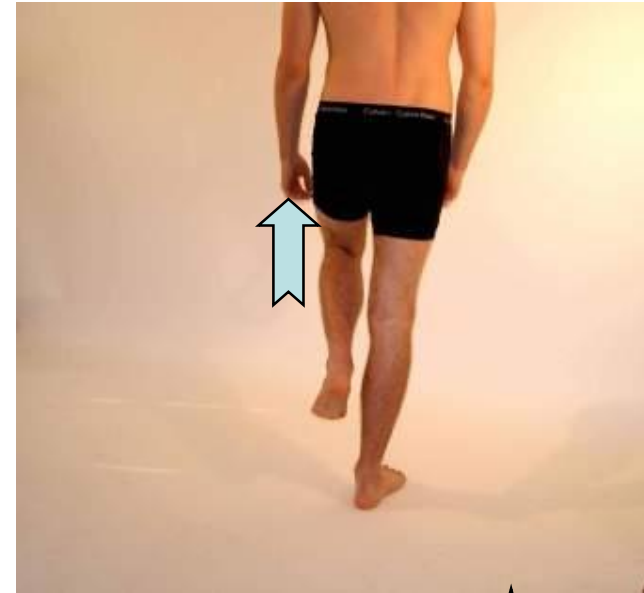
Test for hip flexion contracture - Thomas' test

1. Test for contracture of hip flexors or anterior ligamentous structures.
2. The patient is supine with both legs straight.
3. The examiner stands beside the patient.
4. The examiner observes the lumbar lordosis, then flexes one of the patients hips and knee fully to obliterate the lumbar lordosis.
5. The examiner may observe that the lordosis was increased to begin with, or that the opposite hip flexes during the test.
6. Positive if opposite hip flexes during the test. Positive test may indicate a hip flexion contracture.



Trendelenburg's Test

1. Test for hip and regional muscular dysfunction.
2. The patient is standing.
3. The examiner stands behind patient.
4. The examiner instructs the patient to lift one foot off the floor, then the other.
5. The examiner may observe that the pelvis on the stance leg remains the same height, moves up, or down.
6. Positive if the pelvis on the stance leg moves downwards. Test negative if it remains the same height or moves up.
7. Positive test may indicate hip dysfunction like fracture and dislocation or weakness of regional muscles.
8. Test may also be positive due to a sacroiliac pathology, therefore the sacroiliac joint should be tested separately



Iliotibial band test - Ober's and Modified Ober's test.

1. Test for excessive tension in the iliotibial band.
2. The patient is sidelying with hips and knees flexed.
3. The examiner stands behind patient.
4. The examiner extends and abducts the patients hip with the knee flexed. The examiner then allows the thigh to be lowered to the adducted position.
5. The position of the patients thigh should be observed.
6. Positive if the thigh remains in the abducted position.
7. A positive test may indicate excessive tension in the iliotibial band.



Faber test - Patrick's test

1. Test for hip joint dysfunction such as musculo-ligamentous contracture.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The patient's foot is placed on the opposite knee. One of the examiner's hand stabilises the pelvis and with the other hand it guides the flexed knee downwards towards the plinth thus externally rotating the hip.
5. Observe the position of the patient's flexed knee and pelvis.
6. Positive if the knee remains above the level of the opposite thigh.
7. Positive test may indicate shortening of the muscular and ligamentous structures of the anterior hip.



Knee tests

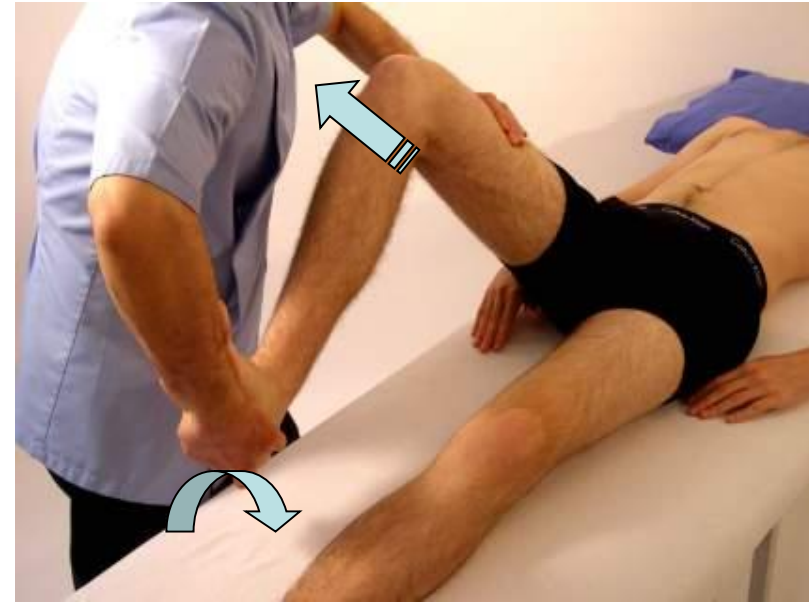
Medial Meniscus testing - McMurray's test.

1. Test for dysfunction of the medial meniscus.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner flexes the patient's knee fully. The examiner palpates the joint line with one hand and holds the patient's calcaneum with the other. The examiner then **externally** rotates the tibia on the femur and exerts a **valgus** force to the knee while it is slowly extended.
5. The joint line should be palpated for tenderness and the patient is asked for occurrence of symptoms.
5. Positive if there is significant snap or click or if the patient reports pain.
6. Positive test may indicate a lesion or dysfunction of the medial meniscus.



Lateral Meniscus testing - McMurray's test

1. Test for dysfunction of the lateral meniscus.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner flexes the patient's knee fully. The examiner palpates the joint line with one hand and holds the patient's calcaneum with the other. The examiner then **internally** rotates the tibia on the femur and exerts a **varus** force to the knee while it is taken through to extension.
5. The joint line should be palpated and the patient is asked for occurrence of symptoms.
6. Positive if there is significant snap or click or if the patient reports pain.
7. Positive test may indicate a lesion or dysfunction of the lateral meniscus.



Anterior and posterior drawer tests - Cruciate ligament test.

1. Test for dysfunction of the anterior and posterior cruciate ligaments.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner flexes the patient's knee to 90°. The leg is stabilised by the patient sitting just in front of the patient's toes to prevent it from slipping forward. The tibia is grasped from just below the joint line. An antero-posterior force is exerted. The anterior aspect of the tibial plateau in respect to the femur is
5. observed .
6. If there is increased anterior shift of the tibial plateau on the femur, or if the patient complains of pain may signify anterior cruciate tear or rupture. Conversely the opposite if there is an increased posterior shift.
7. Positive test may indicate tear or sprain of the anterior or posterior cruciate ligaments.



Lachman's tests

1. Test for dysfunction of the anterior or posterior cruciate ligaments.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner flexes the patient's knee to about 20° . The thigh is stabilised with the opposing hand while the operating hand contacting on the posterior tibia exerts a postero-anterior shearing force of the proximal tibia on the femur.
5. The anterior aspect of the tibial plateau should be observed.
6. Positive if there is increased anterior or posterior movement of the tibial plateau on the femur, or if the patient complains of pain. An excessive anterior shift of the tibia implicates the anterior cruciate ligament and conversely the opposite.
7. Positive test may indicate tear or sprain of the anterior or posterior cruciate ligaments.



Patella apprehension test

1. Test for the presence of retropatellar dysfunction.
2. The patient is supine with quadriceps relaxed.
3. The examiner stands beside the patient.
4. The examiner slowly pushes the patella laterally in an attempt to move it off the trochlear. The level of discomfort remarked upon by the patient should be noted.
5. Observe the patient for apprehension or pain.
6. Positive test may indicate patella subluxation, instability, tracking problems, retropatellar degeneration or femoral trochlea dysfunction.



Patello-femoral grind test - Modified Clarke's test

1. Test for lesions affecting the femoral trochlear articular surface or the patella facets .
2. The patient lies supine with knees extended.
3. The examiner stands beside the patient.
4. (*Various handholds are described, the author prefers this method*). The examiner places the superior border of the patella between their thumb, the web space and their index finger. A downward pressure is applied on the patella and the patient is asked to contract their quadriceps slowly. The examiner may vary the vector of pressure to assess the lateral and medial patella articular facets.
5. Observe the patient for evidence of pain
6. Positive if the patient reports pain with movement. May also be considered positive if the patient is unable to complete the test due to anticipation of pain. The test is negative if after several attempts and changes to the pressure vector the patient reports no symptoms.
7. Signifies degenerative changes to the patellofemoral articular surfaces, or chondromalacia patellae. The test is usually uncomfortable so it should be compared with the opposite side



Medial collateral ligament test - Valgus test

1. Test for the presence of tear or rupture of the medial collateral ligaments.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner holds the patients knee in slight flexion below the joint line with both hands. The examiner then carefully exerts a valgus force on the patient's knee.
5. The knee may be observed to gap freely with no pain beyond it's normal physiological range. It may also be within range, but painful to the patient.
6. Positive if the knee gaps beyond normal range, or if it is painful.
7. Positive test may indicate tear or rupture of the medial collateral ligaments.



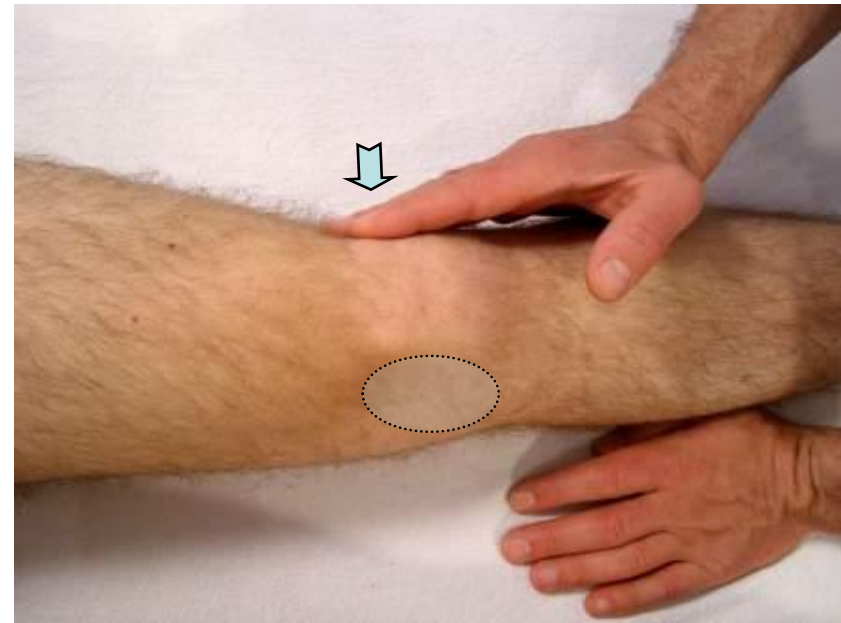
Lateral Collateral ligament test - Varus test

1. Test for the presence of tear or rupture of the lateral collateral ligaments.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner holds the patients knee in slight flexion below the joint line with both hands. The examiner then carefully exerts a varus force on the patient's knee.
5. The knee may be observed to gap freely with no pain beyond it's normal physiological range. It may also be within range, but painful to the patient.
6. Positive if the knee gaps beyond normal range, or if it is painful.
7. Positive test may indicate tear or rupture of the lateral collateral ligaments.



Knee effusion milking test - brush test, stroke test

1. Test for knee effusion
2. The patient is supine with knees extended
3. The examiner stands by the side of the patient
4. The examiner brushes the medial side of the knee joint and patella in a superolateral direction so that any fluid present is displaced to the lateral side. The examiner then presses with his palm on the lateral aspect of the patella.
5. Observe the medial side of the patella for a bulge as the lateral side is pressed.
6. Positive if the skin bulges at the medial aspect of the patella. This is sensitive even with as little as 8ml of extra fluid
7. Signifies joint effusion



Patella tap test - Ballottement test

1. Test for knee effusion
2. The patient is supine with knees very slightly flexed
3. The examiner stands by the side of the patient
4. The examiner presses one hand over the supra patella pouch and gently pushes downwards. With the thumb or the fingers gently taps over the patella.
5. Observe a slight rise in the patella as any fluid is pushed into the centre of the knee joint.
6. Positive if there is significant amount of effusion present the patella will float or bounce back after tapping.
7. Signifies joint effusion



Apley's test- Apley's grind test

1. Tests for a meniscal lesion
2. The patient lies prone.
3. The examiner stands next to the plinth
4. The examiner flexes the patient knee to 90° and with hands on the patient's foot a compressive force is applied against the femur whilst rotating the tibia fully internally and externally.
5. Observe the patient for pain, crepitations, and locking
6. Positive if the patient reports pain or locking which is relieved or reduced by distraction.
7. Signifies a meniscal tear.



Apley's test - Apley's distraction test

1. Tests for capsulo-ligamentous sprain on the knee.
2. The patient lies prone.
3. The examiner stands next to the plinth
4. The examiner flexes the patient knee to 90° and with both hands grasps the patient's ankle. The examiner's thigh is pressed against the patient's thigh to stabilise it. A detractive force is applied at the ankle whilst rotating the tibia fully internally and externally.
5. Observe the patient for pain.
6. Positive if the patient reports pain or locking which may be relieved or reduced by compression.
7. Signifies a sprain to the knee fibrous capsule or to the medial or lateral collateral ligaments



Ankle tests

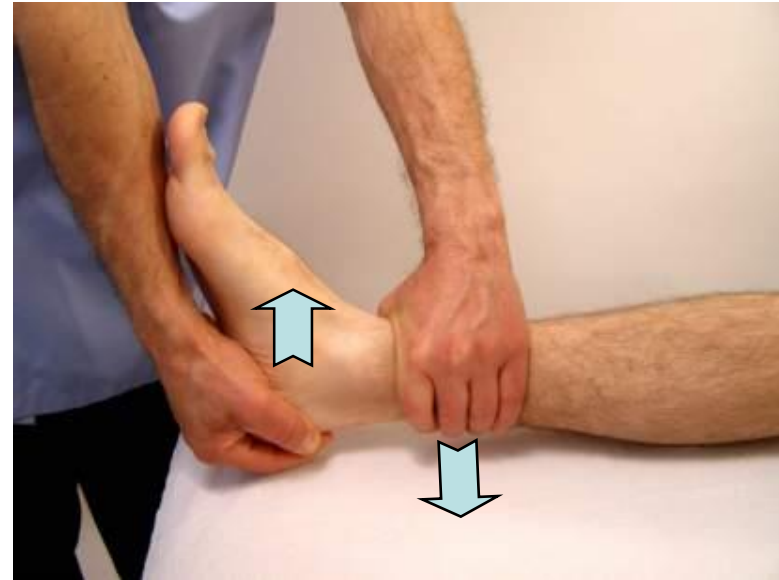
Achilles tendon test - Thompson's test

1. Test for the presence of achilles tendon rupture.
2. The patient is prone with feet hanging from end of plinth.
3. The examiner stands at patient's feet.
4. The examiner squeezes the belly of gastrocnemius firmly.
5. Observe the position of the foot and ankle.
6. Positive if the foot and ankle do not move. The test negative the foot and ankle plantarflexes.
7. Positive test indicates a ruptured of Achilles tendon.
8. An alternative method would be to test with the patient in the prone position and with leg to be tested flexed at the knee to 90 degrees



Anterior drawer test for the ankle

1. Test for presence of anterior talofibular ligament rupture.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner stabilises the posterior aspect of the calcaneum and distal anterior tibia. The talus, via the calcaneum, is drawn forward on the tibia.
5. Observe for excessive anterior movement of the talus and palpate for crepitus.
6. Positive if there is excess anterior shift of talus is present, with or without an audible 'clunk'.
7. Positive test indicates a ruptured anterior talofibular ligament.



Anterior talofibular ligament test

1. Test for presence of injury to the anterior talofibular ligament.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner palpates along the anterior talofibular ligament. The patient's foot is then plantarflexed and inverted.
5. Observe for painful inversion and palpate for tenderness.
6. Positive if inversion is painful with palpable tenderness over the ligament.
7. Positive test indicates a sprained anterior talofibular ligament.



Deltoid ligament test

1. Test for presence of injury to the deltoid ligament.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner palpates along the deltoid ligament. The patient's foot is then everted.
5. Observe for painful eversion and palpate for tenderness.
6. Positive if eversion is painful with palpable tenderness over the ligament.
7. Positive test indicates a sprained deltoid ligament.



Foot tests

Toes squeeze test - Morton's test

1. Test for presence of Morton's neuroma.
2. The patient is supine.
3. The examiner stands beside the patient.
4. The examiner squeezes the metatarsals together.
5. The patient may report pain or paraesthesia in the toes.
6. Positive if pain or paraesthesia are present. .
7. Positive test may indicate the presence of a Morton's neuroma between the metatarsals, it could also indicate metatarsalgia, stress fracture, or deep peroneal neuropathy



Rigid pes planus test

1. Test for presence of pes planus and determine whether rigid in nature.
2. The patient is standing then seated.
3. The examiner observes the patients feet.
4. The examiner instructs the patient to stand and then to sit.
5. Observe if there is any change in the shape of the medial longitudinal arch.
6. Positive if the arch is flat on standing and sitting. .
7. Positive test may indicate a rigid pes planus. If the arch changes and is improved when it is off weight bearing it signifies a flexible arch.



Shoulder tests

Biceps tendon stability test - Yergason's test

1. Test for biceps tendon instability in the bicipital groove.
2. The patient is seated.
3. The examiner stands beside the patient
4. The examiner supports the patients flexed elbow and wrist. The patient is asked to push upwards to flex the elbow as the shoulder is taken into external rotation.
“imitating the action of gasping an apple and taking towards the mouth whilst being resisted”. A variation would be to resist pronation & supination whilst palpating the biceps tendon for tenderness
5. The patient may report pain or sensation of the tendon coming out of the bicipital groove.
6. Positive if pain or abnormal sensation is present. .
7. Positive test may indicate instability of the biceps brachii tendon.



Subacromial impingement test - Neer's test

1. Test for impingement of the supraspinatus tendon.
2. The patient is seated.
3. The examiner stands beside the patient
4. The examiner internally rotates and flexes the patients glenohumeral joint until the end range is met.
5. The patient may report pain in the subacromial region of the shoulder.
6. Positive if pain is present.
7. Positive test may indicate impingement of the supraspinatus tendon.



Drop arm Test - Codman's test.

1. Test for rotator cuff injury.
2. The patient is standing.
3. The examiner stands beside the patient
4. The examiner moves the patient's shoulder to 90° of abduction and then asks the patient to slowly lower the arm back down in the same direction.
5. The examiner observes the patient for pain or abnormal movement.
6. Positive if there is pain or if the arm drops.
7. Positive test may indicate a tear of the rotator cuff.



Apley's scratch test - Shoulder range of movement test.

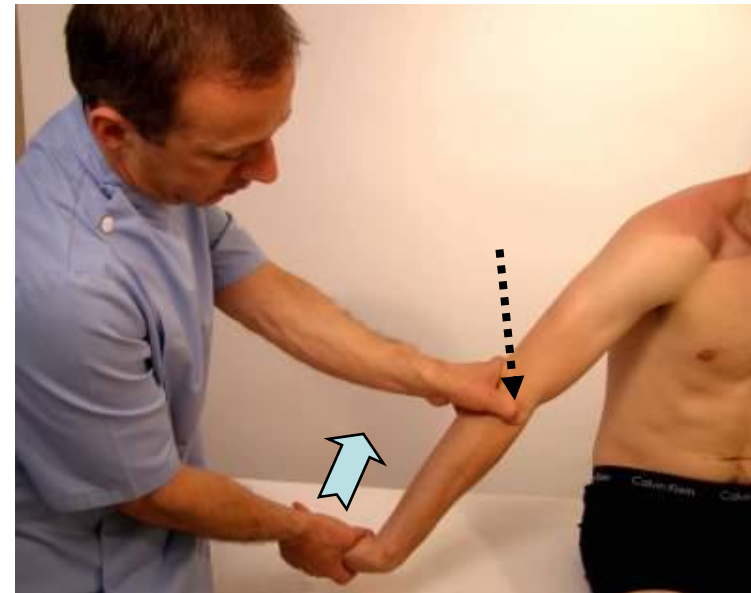
1. Assesses the shoulder's range of movement.
2. The patient is standing or sitting.
3. The examiner stands behind the patient.
4. The patient is asked to place the dorsal aspect of their hand behind their back to reach up towards their scapulae as high as they can. This assesses internal rotation and adduction. Repeat the test this time the patient reaches from above towards their scapulae. This assesses external rotation and abduction. Note the vertebral level reached with each attempt.
5. Observe the patient's hand to note the vertebral level reached.
6. Positive if either internal or external rotation are significantly reduced.
7. Signifies capsulo-ligamentous restrictions.



Elbow tests

Tennis elbow test - Mill's test

1. Test for the presence of lateral epicondylitis.
2. The patient is standing or sitting.
3. The examiner stands in front of the patient
4. The patient's elbow is fully extended and then the wrist is pronated and held into flexion. The patient may report pain at the common extensor origin. A further challenge may be added by asking the patient to attempt to extend the wrist from that position. If negative the examiner can also exert modest pressure with his thumb on the common extensor origin.
5. The examiner asks the patient for the presence of pain or discomfort.
6. Positive if the patient reports pain in the region of the lateral epicondyle.
7. Positive test may indicate lateral epicondylitis.



Ulnar nerve percussion test - Tinel's test.

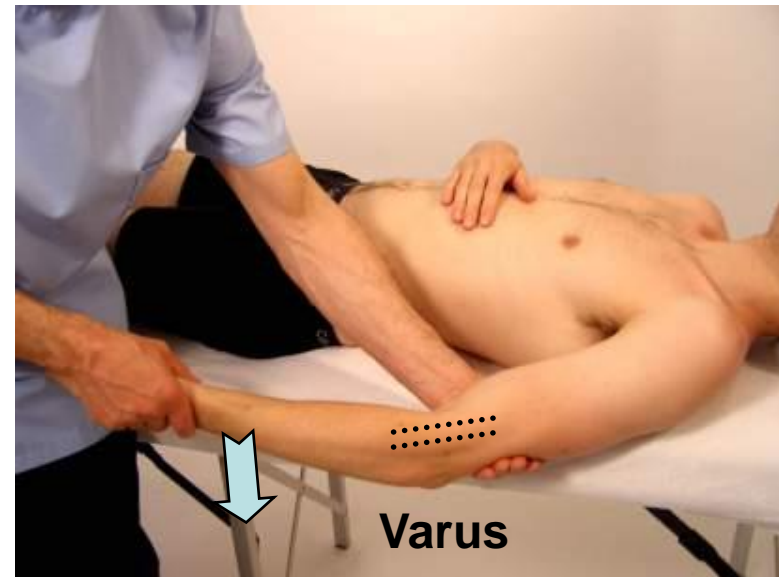
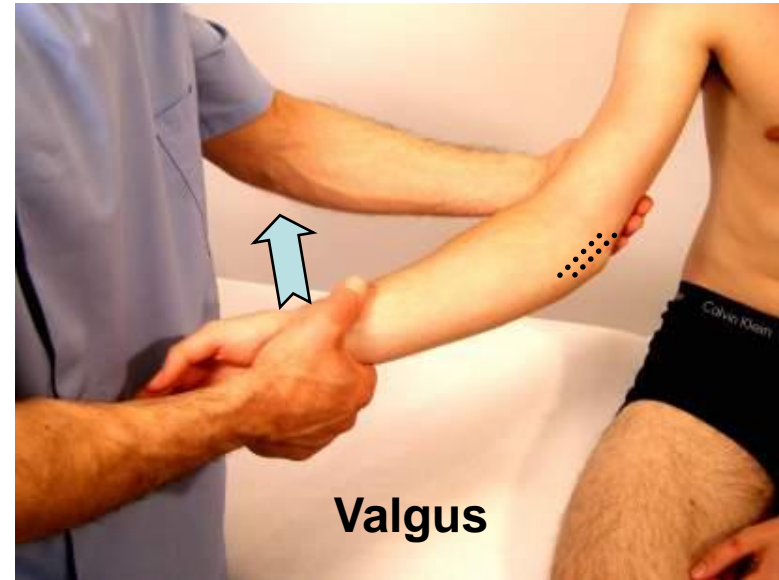
1. Test for the presence of ulnar neuritis in the ulnar groove.
2. The patient is seated.
3. The examiner stands in front of the patient
4. The examiner instructs the patient to flex their elbow. The examiner then percusses the ulnar nerve behind the medial epicondyle with their finger pads.
5. The examiner asks the patient for the presence of pain or paraesthesia in the forearm or medial hand.
6. Positive if the patient reports pain or paraesthesia in the forearm or medial hand.
7. Positive test may indicates ulnar neuritis at the elbow.



Test for collateral ligament stability of the elbow.

Elbow valgus–varus stress test

1. Test for presence of instability of the collateral ligaments of the elbow.
2. The patient is supine.
3. The examiner stands beside the patient
4. The examiner grasps the patient's elbow with both hands distal to the joint. The examiner then exerts a varus and valgus force in an effort to assess the end feel of the lateral and medial aspects of the elbow.
5. The examiner palpates for excessive movement of the elbow joint medially and laterally.
6. Positive if excessive movement is present.
7. Positive test may indicate instability of the elbow due to collateral ligament instability.



Wrist & Hand tests

Scaphoid Test

1. Test for the presence of scaphoid fracture.
2. The patient is seated.
3. The examiner stands beside the patient
4. The examiner asks the patient to extend their thumb as the scaphoid is palpated firmly in the anatomical snuff box.
5. The examiner palpates and asks the patient for the presence of pain or tenderness.
6. Positive if pain or tenderness is present.
7. Positive test may indicate fracture of the scaphoid.



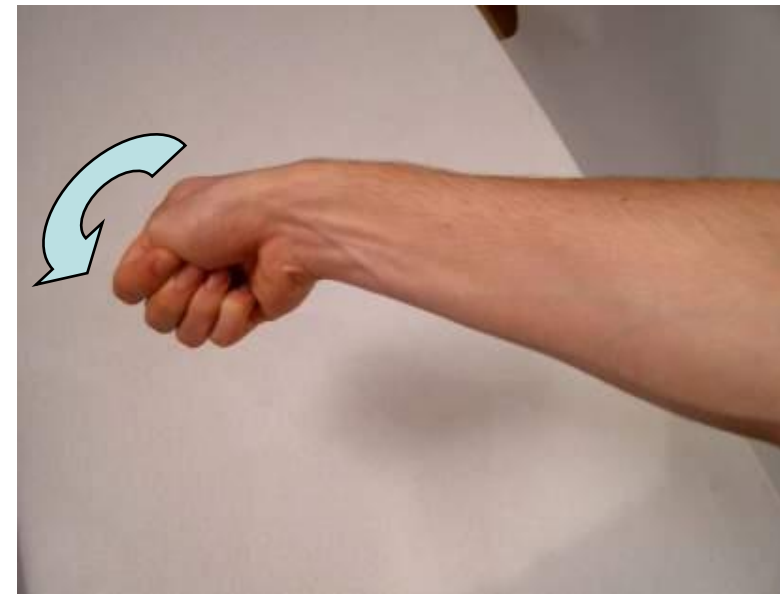
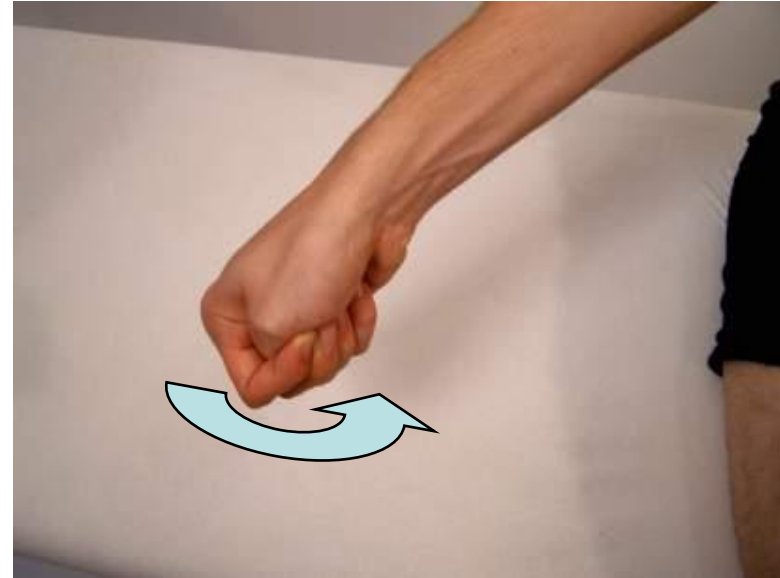
Median nerve percussion test - Tinel's test.

1. Test for the presence of Median nerve compression in the carpal tunnel.
2. The patient is seated.
3. The examiner stands in front of the patient
4. The examiner percusses directly over the median nerve at the carpal tunnel.
5. The examiner asks the patient for presence of pain or paraesthesia in the hand.
6. Positive if the patient reports pain or paraesthesiae in the hand.
7. Positive test may indicate median nerve compression at the wrist.



DeQuervain's Tenosynovitis test - Finkelsteins test

1. Test for presence tenosynovitis of the extensor pollicis brevis and abductor pollicis longus tendons.
2. The patient is seated.
3. The examiner stands beside the patient.
4. The examiner asks the patient to make a fist with their thumb inside. The examiner then takes the wrist into ulnar deviation.
5. The examiner asks the patient to report any pain or tenderness over the lateral tendons at the wrist.
6. Positive if pain or tenderness is present.
7. Positive test may indicate tenosynovitis of the extensor pollicis brevis and abductor pollicis longus tendons. Note that this may be tender in non symptomatic people so compare with the other side.



Ulnar collateral ligament of thumb test.

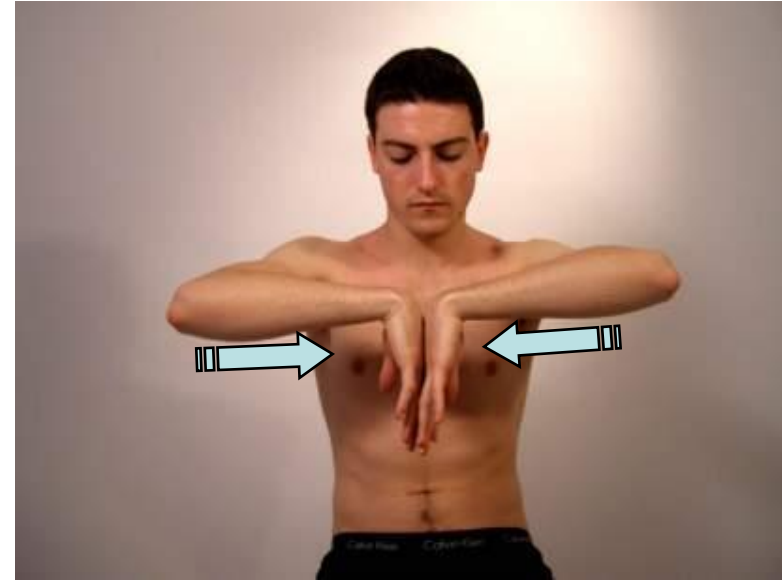
Skier's thumb test. Thumb abduction stress test

1. Test for a rupture of the ulnar collateral ligament of the thumb.
2. The patient is seated.
3. The examiner stands in front of the patient.
4. The examiner extends the patients thumb and takes the metacarpophalangeal joint into radial deviation.
5. The examiner observes for excessive movement of the 1st metacarpophalangeal joint.
6. Positive if excessive movement is present ($>35^{\circ}$).
7. Positive test may indicate a rupture of the ulnar collateral ligament of the thumb.



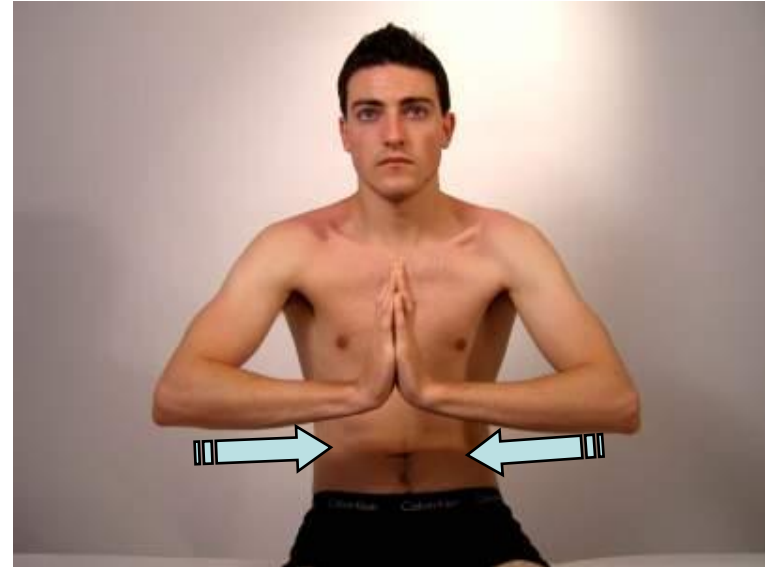
Phalen's test- Median nerve test. Carpal tunnel test

1. Tests the integrity of the median nerve deep to the carpal tunnel
2. The patient is seated or standing
3. The examiner stands in front of the patient
4. The patient flexes their wrists and places their hands back-to-back against each other sustaining a modest compression for up to one minute. (An alternative test would be for the examiner to actively flex one of the patient's wrist).
5. Observe the patient for pain.
6. Positive if the patient reports paraesthesiae in the distribution of the median nerve. There may also be noticeable weakness in thumb opposition.
7. Signifies carpal tunnel syndrome



Reverse Phalen's test - Median nerve test - Carpal tunnel test

1. Tests the integrity of the median nerve deep to the carpal tunnel
2. The patient is seated or standing
3. The examiner stands in front of the patient
4. The patient extends their wrists and places their palms against each other sustaining modest compression for up to one minute.
(An alternative test would be for the examiner to actively extend one of the patient's wrist).
5. Observe the patient.
6. Positive if the patient reports paraesthesiae in the distribution of the median nerve.
There may also be noticeable weakness in thumb opposition.
7. Signifies carpal tunnel syndrome



End