

COURSE OVERVIEW

Conducting a Pre-Employment Medical: A Practical Guide for Occupational Health Nurses and Doctors

This course is not about diagnosis. It is about collecting accurate information in the correct way and recording the findings in such a way as to be readily interpretable by others. It focuses on the mechanics of performing pre-employment medical assessments rather than interpretation of results.

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With thanks to Dr Amanda SILLCOCK

COURSE OUTLINE

The focus of this workshop will be on upgrading skills, particularly those of nurses, but also of Doctors, to allow them to conduct a Pre-Employment Medical. The focus will be on the following six areas:

1. Upgrading current Examination skills in the areas of cardiovascular and respiratory examination;
2. Teaching the musculoskeletal examination, including commonly required special tests and how to measure joint movements;
3. Hunting the Hernia;
4. Teaching the commonly requested neurological tests, such as Romberg;
5. Testing and recording vision, including the near, distance and colour vision, as well as field of vision to confrontation; and
6. Examining the ears, specifically the external canal and drum, and throat.

REQUIRED SKILLS

Mandatory

- Current APHRA registration as a Registered Nurse, or Doctor.

Depending on prior experience, the **areas requiring upskilling** might include:

- Basic anatomy and physiology of the joints of the musculoskeletal system;
- Ear examination
- Heart examination – heart sounds - normal and abnormal
- Lung examination – lung sounds - normal and abnormal
- Circulation – peripheral pulses
- Urinalysis
- Blood Pressure, Pulse Rate
- Musculoskeletal Range Of Movement assessment
- Extension tests for specific joints:
 - *Shoulder* - Rotator Cuff Testing (Supraspinatus, Infraspinatus, Subscapularis), Apprehension Test
 - *Knee* – Ligament assessment (ACL, PCL, MCL, LCL), Crepitus, McMurrays (Bragards), Lachman’s, Effusion, Patella apprehension test, Quadriceps wasting
 - *Ankle* – Wobble Board
- Balance examination – Romberg, Heel to Toe (or Tandem Walk)
- Friedman score
- Coordination – finger-nose-finger test and Dysdiadochokinesia (flip Flop)
- Hernia examination
- Liver examination
- Carpal Tunnel examination – Tinels Test, Phalens Test
- DeQuervains Tenosynovitis, Finkelsteins Test
- Common extensor origin tendinosis aka “Tennis Elbow” provocative tests
- Visual Acuity – near and distance
- Colour Vision – Ishihara
- Visual Fields and extra ocular movements

Skills not part of this course:

- Audiometry
- Spirometry
- Drug and Alcohol Testing

CONSENT

It is important that consent be obtained from the candidate prior to the examination. This should be written. It will usually be provided with the Pre-employment documentation, however the examiner must ensure that such consent has been signed prior to the conduct of the pre-employment physical examination. If at any time during the examination the candidate indicates they do not wish to continue, then our advice is to terminate the examination, ask the candidate to dress and leave the room whilst they are dressing. Whilst they are doing so, the withdrawal of consent should be reported to management. It is up to management then to make a decision as to how to proceed further. DO NOT attempt to talk the person into completing the examination. Any attempt to do so can be construed later as coercion.

PRE-EMPLOYMENT EXAMINATION

It is important to inform the candidate what you are going to do prior to starting the examination. Explain to the candidate that you need to perform an assessment of the range of movement of all of their joints, from their neck to their ankles; also checking their vision, their heart and lungs, performing a hernia check in their groin, followed by an assessment of their balance and coordination. Therefore, you will be asking them to remove their external clothing, including shoes and socks, leaving their underwear on. We advise to provide women with a gown.

USE OF CHAPERONES

Given the potential for false accusations of sexual impropriety to occur in any employment setting, it has been Dr Madden's protocol since 2001 to conduct pre-employment examinations with a chaperone present if the candidate is female and the examiner is male. It has also been Dr Madden's protocol to provide a gown for female candidates and where necessary, appropriate theatre panties. To examine the groin, a modesty sheet is used to cover the women's legs when the gown is raised. When examining the spinal movements for a female candidate, the spine is exposed through the back of the gown. This is not so much to watch the spine itself move, but to check for evidence of spinal surgery.

Males are generally examined in their underpants or shorts.

LEGIBLE DOCUMENTATION

The main purpose of recording medical information is to communicate with other healthcare professionals, and a legible record facilitates that purpose. A secondary purpose of the record, however, is to create a good legal document for evidence, and legibility also contributes toward that end.

If you are writing notes by hand, you must take the time to make your records readable to other healthcare practitioners as well as to any potential lawyers.

It is crucial that any documentation on a pre-employment medical to formally record your work must be recorded clearly, accurately and legibly. Handwriting that is illegible inevitably provides meaningless information to other healthcare providers attempting to interpret your notes, or the potential for misinterpretation of the results.

USING ACCEPTABLE ACRONYMS/ABBREVIATIONS

One of the major causes for errors in medicine is the ongoing use of potentially ambiguous abbreviations and acronyms. When documenting information on the pre-employment medical, use only standard medical abbreviations and acronyms (See Appendix 4)

While using acronyms and abbreviations can be a time and space saver, it is of vital importance that only the standard abbreviations and acronyms are used. An abbreviation used by one medical professional may mean something quite different to the person interpreting the abbreviation, and can also be combined with other words or numerals to appear as something altogether unintended, therefore increasing the potential for error.

THE DIFFERENCE BETWEEN DIAGNOSTIC AND SCREENING TESTS

One of the problems with the design of many Pre-Employment Medical Forms is that they have not been designed by Doctors very experienced in the field. Many pre-employments are copied by HR Managers from other pre-employments and then modified with little knowledge of the physiology, anatomy of the human body, and almost no knowledge of medical spelling! Any of you who have designed a medical will likely have been plagiarised with or without your knowledge. Dr Madden at least three times! Imitation is the sincerest form of flattery. There is also often little or no regard for equal opportunity issues and the questions may be quite inappropriate.

A good example of this poor design and lack of medical knowledge, is the testing of reflexes. Reflex testing is a classic diagnostic test. It has little use as a screening test, yet it is an almost universal component of a Pre-employment medical, which is a screening test. If the person has a problem, for example, back pain, you test the reflexes to see if there is evidence of spinal nerve compression, a diagnostic test. In an occupational screening situation, you will find people who are generally hyperreflexic or hyporeflexic, in particular the latter with people who are tense during the examination. Thus testing of reflexes provides little useful information that couldn't be collected better by other tests.

This is not to say we will not teach Diagnostic tests. Diagnostic tests are required to elaborate on the history given or an abnormality found on a screening test.

Other examples of diagnostic tests are the Tinel's and Phalen's. When used as screening tests, you will pick up a lot of people who do not have Carpal Tunnel Syndrome. In particular, many people will have a change in sensation in their hand after 45 seconds of a Phalen's test probably due to circulatory compression rather than median nerve compression. There are some tests which can be used for screening, for example, the empty can and infraspinatus tests, and Finkelstein's when performed correctly, that is, without too closed a fist, nor too vicious an ulnar deviation. Thus, tests we routinely include as part of a Pre-employment assessment are screening.

In the knee, the tests we have described are all diagnostic, not screening. You will need to use these diagnostic tests if someone has declared a prior knee injury. You will note we do not teach the duck walk. This is a screening test and will be abnormal when there is a knee issue present. However the duck walk carries with it a significant risk of aggravating a pre-existing meniscal condition in the knee in asymptomatic people, and therefore it is not taught as part of this course.

Tenderness about the medial and lateral epicondyles is a good screening test for tendinosis, however everyone will be slightly tender if enough force is exerted. What we have found is the force able to be exerted with the thumb and index finger ranges upwards of seven (7) kilograms and is enough to induce false positives. That between the thumb and middle finger, in the average adult, ranges up to approximately 5 kilograms (slightly built women may need to use their index finger and heavily built males may need to use their ring finger). This screening test is a good example of one which requires further diagnostic tests for its interpretation. One would not call tenderness about the elbow from compression on the lateral or medial epicondyle evidence of a tendinosis without positive diagnostic tests.

EQUIPMENT LIST

Essential

- Pinhole glasses
- Near vision charts
- Distance vision charts
- Ishihara Book
- BP automatic machine or manual cuff
- Goniometer
- Stethoscope
- Otoscope & disposable ear pieces
- Bed, pillow, sheet
- Gown and modesty sheet (for females)
- Tape measure
- Calculator
- Urine Testing Strips
- Scales
- Stadiometer
- Gloves

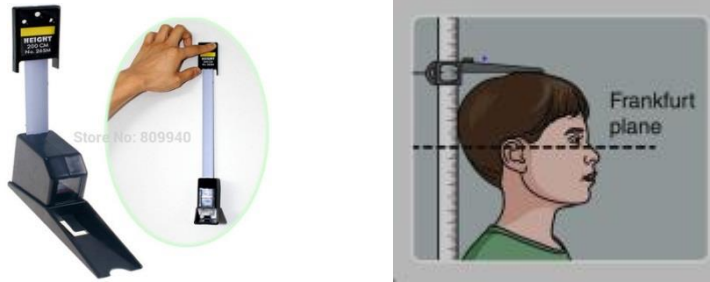
Optional

- Glucometer, test strips, lancets, sharps container, band-aids
- Dynanometer (Jamar)
- Hydraulic Pinch Gauge
- Reflex hammer
- Wobble Board

BIOMETRICS

Height

Height is the measurement of vertical distance between the lowest and highest points of a person standing upright. A candidate's height is preferably measured using a Stadiometer, a wall mounted height measure. It is important to record height measurement accurately for BMI and Spirometry calculations (for Spirometry, to the nearest millimetre)



Weight

Weight is a body's mass or the quantity of matter contained by it, giving rise to a downward force; the heaviness of a person or thing. Measured using scales, in kilograms.



BMI

Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in metres (kg/m^2).

Neck Circumference

It is the measurement of the *smallest* circumference of the neck. Neck circumference is used as a screening measure for overweight and obesity and is used as a risk factor for sleep apnoea. It has been found to be more predictive of obstructive sleep apnoea than obesity.



Vision

Visual Acuity is a measure of a person's central vision, the ability to distinguish details and shapes of objects.

Vision is tested uncorrected first, then corrected. Always ask the candidate if they wear contact lenses, as vision is tested as corrected vision in these candidates. It is important that the examiner covers one eye, then the other with an opaque object such as paper or cardboard. The candidate should not cover their own eyes with their hands. There are two reasons for this - first, they could peek through their fingers, and second, they may exert pressure on their eyeball which can falsely decrease that eye's acuity.

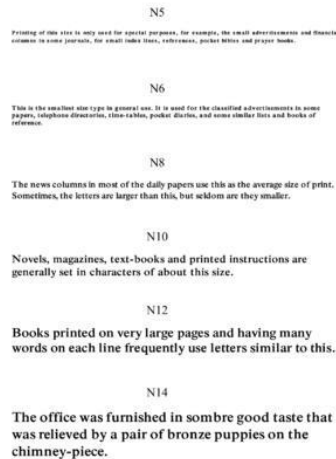
The examiner covers first one eye, then the other. No eyes are covered when testing binocular vision.

Distance vision – is measuring a person's ability to see objects far away. It is tested using a chart with differently sized letters read from a distance of six metres away. This is called the Snellen's Test Types.

Vision is expressed using a *Six Scale*. 6/6 is normal vision. The person can see at 6 metres what normal persons see at 6 metres. The bottom figure changes to denote the visual acuity: 6/12 means the person sees at six metres what normal people could see at 12 metres.



Near vision – The near vision test is measuring a person’s ability to read and see objects close up. The book is held 40cm from the candidate’s eyes. It is measured using the *N Scale*. N refers to near and like distance, N6 is normal, N5 is better than normal, and N8 worse.



Hot Tip!

Candidates forget lots of things, from the time their testing was booked, to their glasses. If the candidate’s uncorrected vision falls below normal and they have forgotten to bring their corrective lenses to the assessment, a pair of **Pinhole** glasses may be provided to them. Pinhole glasses consist of a frame with non-prescription opaque lenses that have a pattern of many small (approx. 1mm) holes (or “pinholes”) for the candidate to see through. The pinholes can produce a reasonably clear image on the retina by allowing only a small portion of light rays that are reflected from an object to pass through small points on the lens. This eliminates most of the light rays that would remain unfocused by an eye that is nearsighted, farsighted, or has astigmatism.

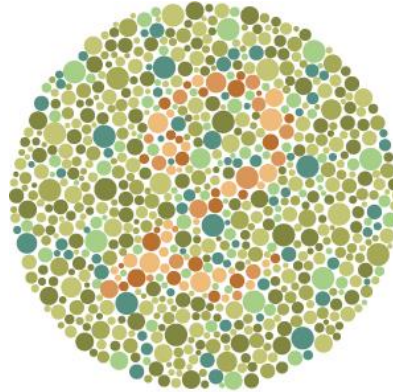
This same principle is in play when a person who needs corrective lenses squints when they don’t have their glasses on. The squinting reduces the effective size of their pupil and limits the amount of unfocused light rays reading their retina. The results: better vision!

If the pinhole lens fails to improve vision, an eye health problem, such as a cataract or astigmatism, may instead be the cause of their problem.



Colour Vision

Ishihara - The Ishihara Colour Test is a colour perception test colour deficiencies. The test consists of a number of colored plates, called *Ishihara plates*, each of which contains a circle of dots appearing randomized in color and size. Within the pattern are dots which form a number or shape clearly visible to those with normal color vision, and invisible, or difficult to see, to those with a color vision defect, or the other way around.



Depending on the job, if the candidate answers more than 2 Ishihara plates out of the first 12 incorrectly, then a practical colour test may be required. Further testing is usually done by an Optometrist.

Urinalysis

A **urinalysis** (UA) is an array of tests performed on urine, using urine test strips or light microscopy. Urinalysis can reveal diseases that have gone unnoticed because they do not produce striking signs or symptoms. Examples include diabetes mellitus, various forms of glomerulonephritis, and chronic urinary tract infections.

The most cost-effective device used to screen urine is a paper or plastic dipstick. This microchemistry system has been available for many years and allows qualitative and semi-quantitative analysis within one minute by simple but careful observation. The colour change occurring on each segment of the strip is compared to a colour chart to obtain results.



Blood – A positive result may be indicative of haematuria from trauma, infection, inflammation, infarction, calculi, neoplasia, clotting disorders or chronic infection.

Glucose - Glycosuria occurs in patients with elevated serum glucose levels or in the presence of a reduced renal threshold and reduced glucose reabsorption in renal tubular disease and pregnancy. At The Health Advantage, a BSL is always performed using a finger prick glucometer if a positive dip test for glucose is found.

Protein – Protein in the urine can indicate renal, CVS and functional proteinuria. It can also be present in concentrated or alkaline urine.

Skin

When documenting your finding regarding skin, the following need to be recorded:

1. *Size and extent* e.g. 1cm round lesions covering most of the trunk;
2. *Areas spared* e.g. sparing the face;
3. *Colour* e.g. red, appears inflamed;
4. *Whether it is flat, raised above the skin or a combination of both* e.g. raised edge, flat in the centre; and
5. *Texture and presence of Scaling* e.g. rough with scaling.

It is important to understand that you don't have to make a diagnosis but if you have some experience, you can have an opinion. For example, appears to be dermatitis.

NB It is permissible *with the candidate's permission* to take a photo with the following conditions:

- Consent must be obtained and documented; and
- Photo does not involve intimate areas of the body, such as the genitals or breasts.

Solar Damage - A solar keratosis is the most common skin condition resulting from skin damaged by the sun over many years. Solar keratosis (also known as actinic keratosis) are usually rough, scaly patches on sun-exposed areas such as the head and face, hands and forearms.



Dermatitis/Eczema – an inflammation of the skin, characterised by itchy, erythematous, vesicular, weeping, and crusting patches. The cause of atopic or genetically determined dermatitis is unclear. One possibility is a dysfunctional interplay between the immune system and skin. There are forms of Dermatitis which occur due to contact with either skin irritants (soap, detergents, chemicals, oils, solvents etc) or skin allergens (bandaids, leather, dyes, metals).



Tinea - Tinea is a very common fungal infection of the skin. Tinea is often called "ringworm" because the rash is circular, with a ring-like appearance.



Psoriasis – Psoriasis is a long lasting disease characterized by patches of abnormal skin. These skin patches are typically red, and scaly. They may vary in severity from small and localized to complete body coverage. Psoriasis is rarely of occupational significance.



Recommended Reading: *Skin Disease Diagnosis and Treatment, Habif et al, 4th Edition*

Oedema Oedema is observable swelling from fluid accumulation in body tissues. Oedema most commonly occurs in the feet and legs, where it is referred to as peripheral oedema. The swelling is the result of the accumulation of excess fluid under the skin in the spaces within the tissues, from many varying causes. The only diagnostic test to establish the presence of oedema is examination and palpation of the extremities. The examiner is observing the absence or presence of pitting at the area of palpation. The degree of oedema is commonly described on a subjective 0 to 4+ scale in order of increasing severity. Absence of clinical oedema scores 0, slight pitting (2 mm) scores 1, deeper pitting (4 mm) scores 2, deep pitting (6 mm) with visible dependent swelling scores 3, and very deep pitting (8 mm) along with gross distortion of leg contour from swelling scores 4.

Varicose Veins Varicose veins are veins that have become enlarged and twisted. The term commonly refers to the veins on the leg, although varicose veins can occur elsewhere. They can vary from mild to severe.

When recording the presence of Varicose Veins, record:

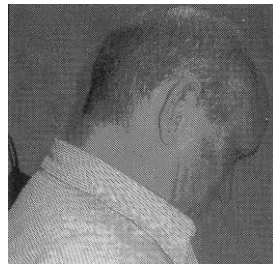
1. *Size* – small, moderate, large;
2. *Side & Extent* – eg Left sided involving most of lower leg;
3. *Skin* – Pigmentation changes, thinning, varicose eczema.



RANGE OF MOVEMENT

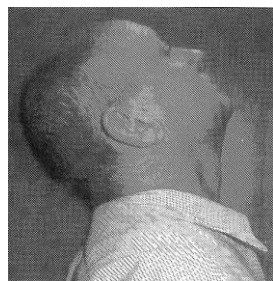
Cervical ROM

Cervical Flexion – ask the candidate to tilt their head down to touch their chin to their chest.



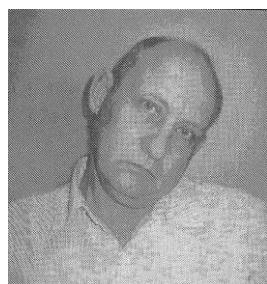
0 - 50°

Cervical Extension – ask the candidate to tilt their head back as far as they can.



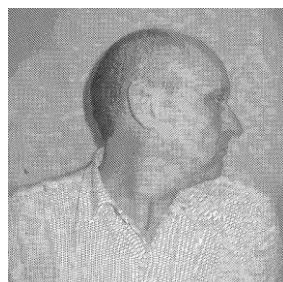
0 - 50°

Cervical Lateral Flexion – ask the candidate to tilt their head to touch their left ear to their left shoulder, and repeat with the right.



0 - 45°

Cervical Rotation – ask the candidate to turn their head to look over their left shoulder, and repeat with the right.



0 - 80°

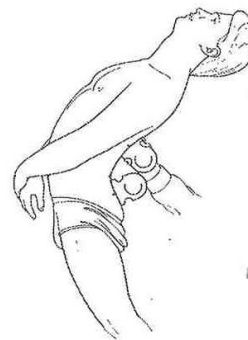
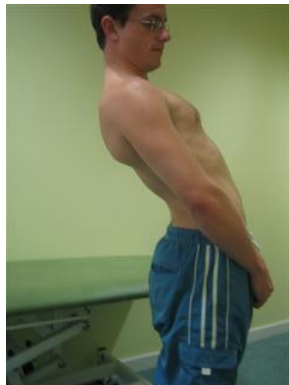
Thoracolumbar ROM

Flexion – ask candidate to stand with the feet together, keeping legs straight, bend down to touch their toes.



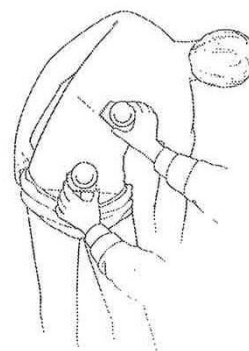
0 - 90°

Extension – ask candidate to stand with their feet together, then lean backwards as far as they can from their hips.



0 - 25°

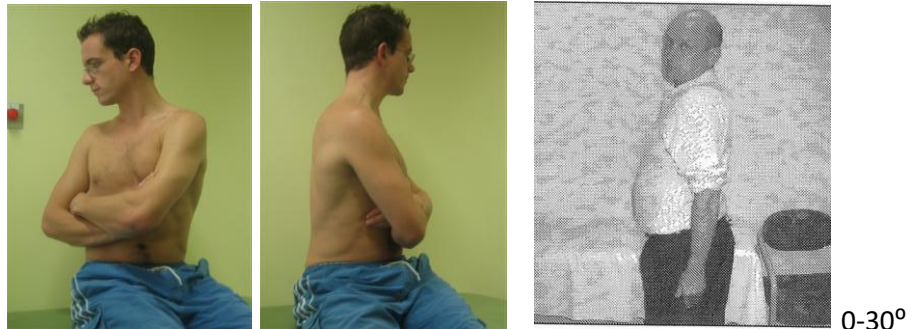
Lateral Flexion – ask candidate to stand with their hands by their sides, feet together, then lean directly to their left and then right, to touch their hands to their knees.



0 - 20°

TxLx (cont)

Rotation – standing behind the candidate, ask the candidate to twist fully over their left, and then right, shoulder.



Straight Leg Raising

Ask candidate to hold their leg in full knee extension and raise the leg into the air as high as they can.

Fig 1

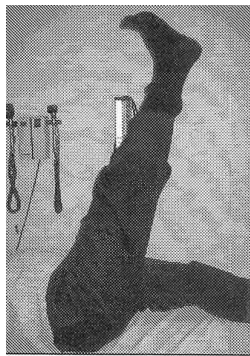
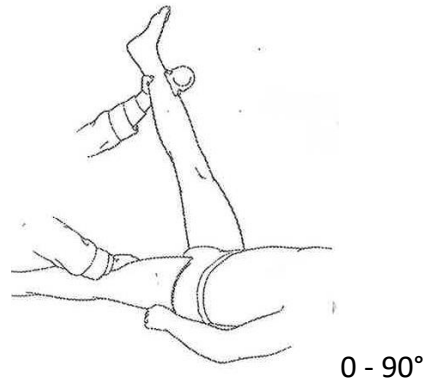


Fig 2



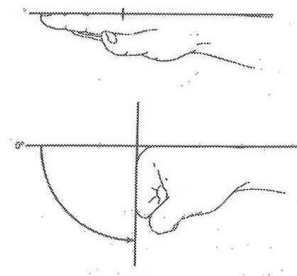
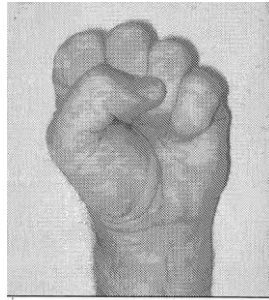
N.B Conducting a Straight Leg Raising test is a common cause of patient complaints, especially if the examiner moves the leg as in Fig 2. In my opinion it does not add much to the examination as a screening test. Unfortunately, it is requested in the majority of medicals, therefore we now conduct the SLR *sitting*.

Ask patient sitting on the bed/chair to extend first one leg, then the other, and to stop if any pain is felt. We record the sitting SLR in degrees as a lack of knee extension. Each degree of restriction of knee extension translates to the same number of degrees of lack of hip extension in the lying straight leg raise.



Eg. 0° knee extension = 90° lying SLR
 -30° knee extension = 60° lying SLR

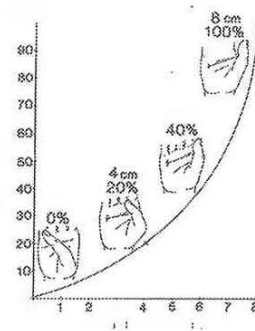
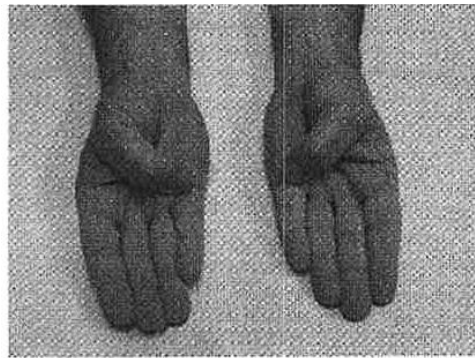
Fingers/Thumbs Ask candidate to make a fist with both hands.



0-90°

Easiest way to measure this is as a lack of “wind up” of the fist. See [examples....](#)

Thumb Adduction – with palms held out, ask candidate to touch their thumb to the base of their 5th finger.



Wrists

Radial Deviation – ask candidate to hold forearms out straight with their thumbs upwards, and rotate their wrists *up*.



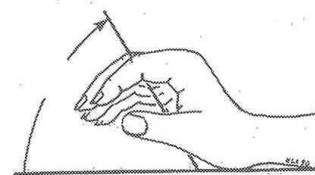
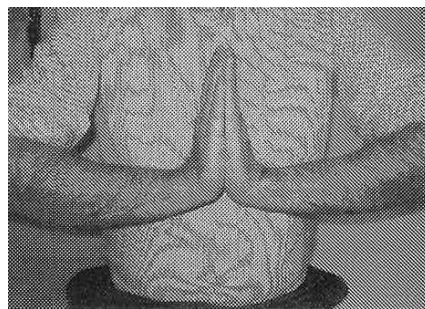
0 - 20°

Ulnar Deviation – ask candidate to hold forearms out straight with their thumbs upwards, and rotate their wrists *down*.



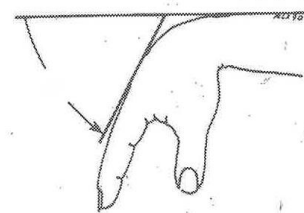
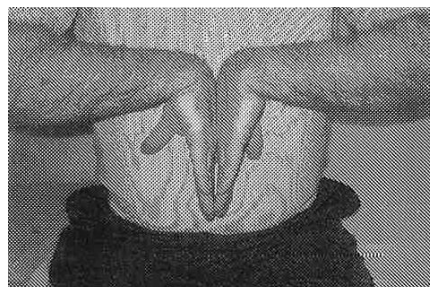
0 - 30°

Wrist Extension – ask candidate to bring palms of hands together in front of their chest, like a praying position.



0 - 60°

Wrist Flexion – ask candidate to bring backs of hands together in front of their chest, like an inverted praying position.

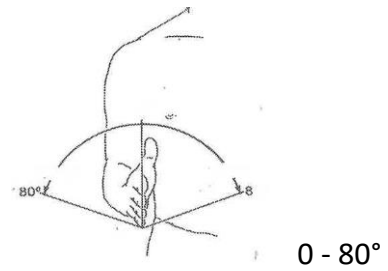


0 - 60°

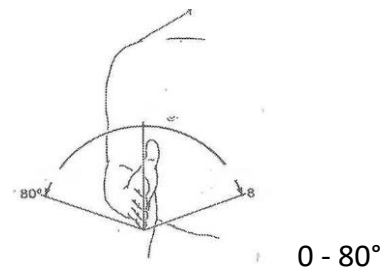
Elbows

Ask candidate to hold arms and hands straight out in front of them, palms facing downwards. First observe tops of hands for any *ganglions*, and *dermatitis* between the fingers.

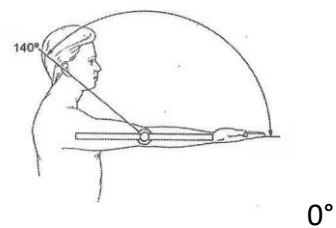
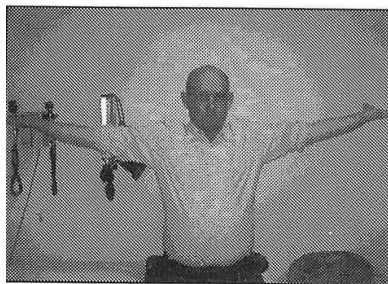
Elbow Pronation – while in this position, observe the degrees of elbow pronation.



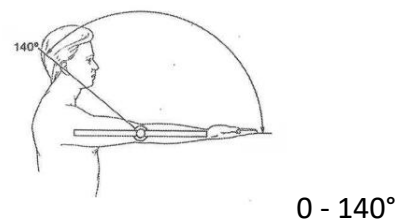
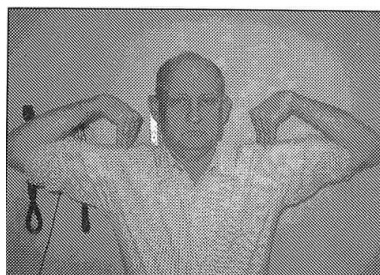
Elbow Supination – ask candidate to rotate palms of hands to face upwards, observing the degrees of elbow pronation.



Elbow Extension - ask candidate to hold arms out straight, observing the angle.

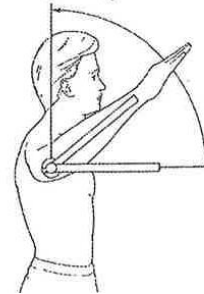
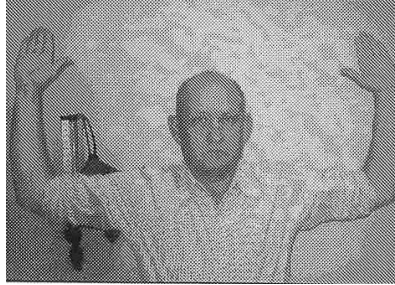


Elbow Flexion – with arms held out straight, ask the candidate to bend elbows to touch their hands to their shoulders.



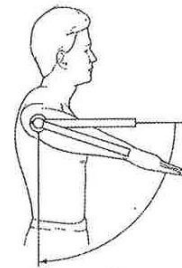
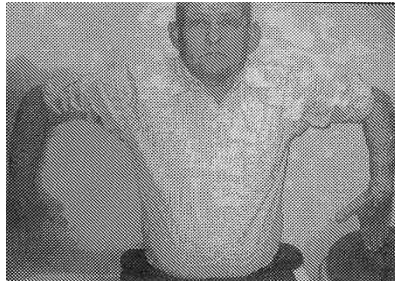
Shoulders

External Rotation – ask candidate to hold their arms straight, with elbows bent at 90°.



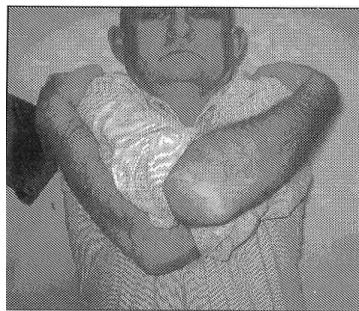
0 - 90°

Internal Rotation – ask candidate to hold their arms straight, with elbows bent at 90°, then rotating down until hands are adjacent to their waist.



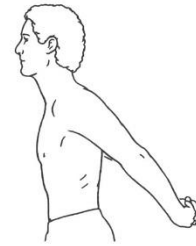
0 - 90°

Shoulder Adduction – ask candidate to place their hands on opposite shoulders, much like 'giving themselves a hug'.



0 - 50°

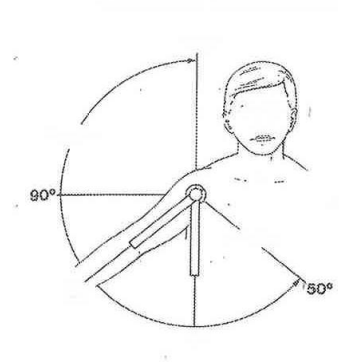
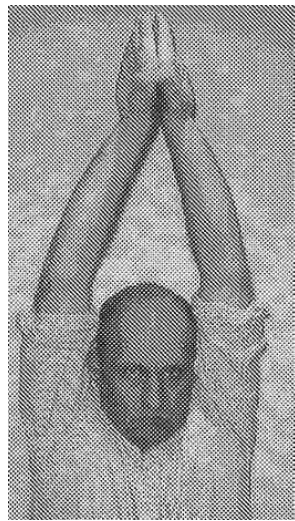
Shoulder Extension – ask candidate to place their elbows at their waist with their arms extended, then pulling their elbows backwards as far as they will go.



0 - 50°

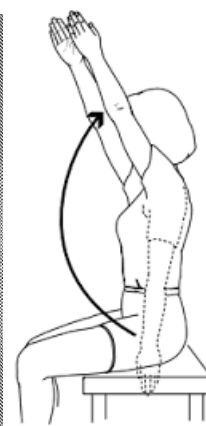
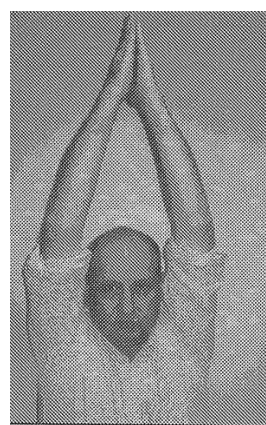
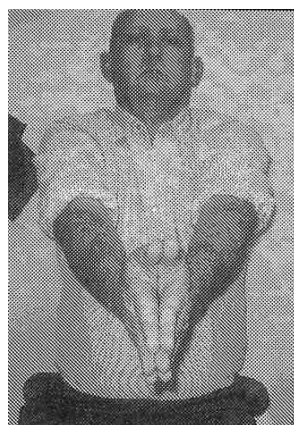
Shoulders (cont)

Shoulder Abduction – ask candidate to full extend their arms beside them, then bring the backs of their hands together above the top of their head.



0 - 170°

Shoulder Flexion – ask candidate to bring the palms of their hands together in front of them with their arms fully extended, then holding that pose, raise arms directly above their head.



0 - 170°

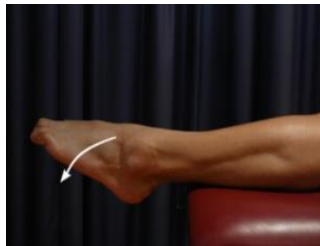
Ankles

Ankle Dorsiflexion AKA Extension – Ask candidate to point their toes towards their head.



0 - 15°

Ankle Plantar Flexion AKA Flexion – Ask candidate to point their toes away from their head.



0 - 60°

Ankle Inversion – Ask candidate to twist the bottoms of their feet to face each other, ensuring the movement has come from their ankle joint.



0 - 30°

Ankle Eversion – Ask candidate to twist the bottoms of their feet away from each other, ensuring the movement has come from their ankle joint.

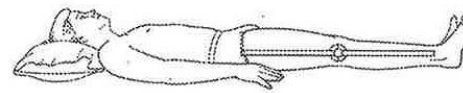


Eversion

0 - 20°

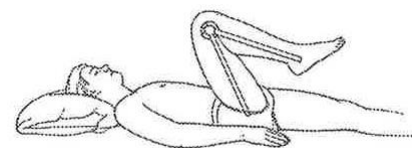
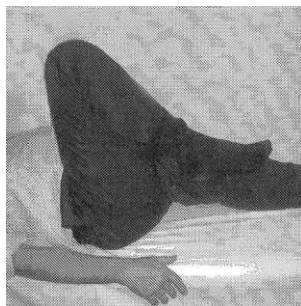
Knees

Knee Extension – Ask candidate to hold their leg fully straight.



0°

Knee Flexion – Placing your hand over the candidate's knee, ask them to fully bend their knee.

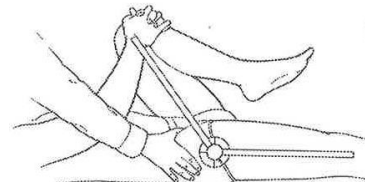
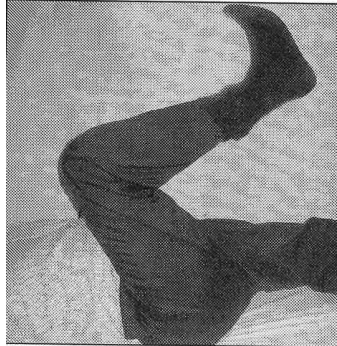


0 - 140°

Whilst the candidate bends their knee, the assessor is feeling for any **Crepitis** in the knee joint. This is graded with a +, e.g +Crepitis indicates mild Crepitis, up to +++Crepitis indicating severe Crepitis. It is also documented whether the Crepitis is *symptomatic* or *asymptomatic*.

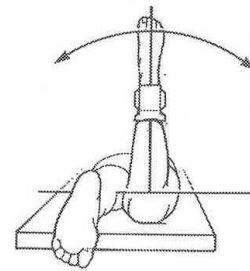
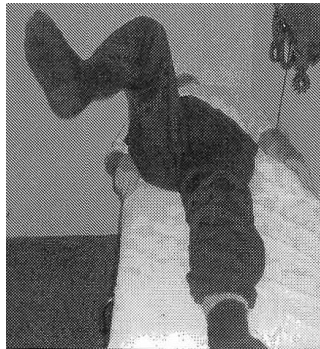
Hips

Hip Flexion – ask candidate to bring knee up into full flexion towards their chest.



0 - 130°

Internal Rotation – ask candidate to bring knee up into full flexion towards their chest, then rotate foot outwards.

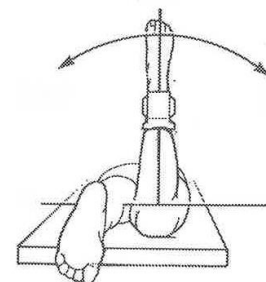


0 - 40°

Supine position

Alternatively can be done supine

External Rotation – ask candidate to bring knee up into full flexion towards their chest, then rotate foot inwards.



0 - 45°

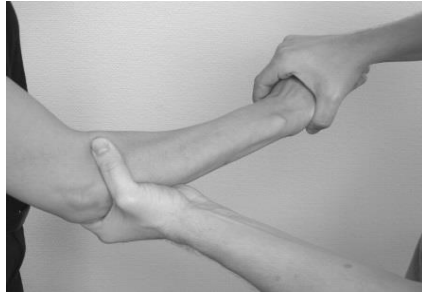
Supine Position

Alternatively can be done supine

SPECIAL TESTS

Common Extensor/Flexor Origin Tendinosis

Ask the candidate to flex their elbows, apply pressure, approximately 5kg, (using thumb & middle finger will achieve this) to the CFO & CEO at the medial and lateral epicondyles. Any pain felt is regarded as a positive test.



Common Extensor Origin Tendinosis (Three provocative tests)

1. *Forceful Grip* – the examiner asks the candidate to squeeze with the affected hand the examiner's two fingers as hard as possible (a Jamar can be substituted for your two fingers if you have one). This test is positive if there is pain at the elbow over the common extensor tendon origin provoked by gripping.
2. *Resisted Wrist Extension* – the examiner asks the candidate to extend the wrist fully and then tells the candidate to hold it there forcefully whilst the examiner attempts to straighten the wrist. The test is positive if pain is provoked at the common extensor origin.
3. *Resisted Third Finger Extension* – the candidate is asked to put their hand on a surface. If sitting on an examination couch, this can be the candidate's thigh. Then asked to lift the third finger up and away from the surface. The examiner then attempts to straighten the finger against the candidate's resistance. A positive test is pain elicited at the common extensor origin. This test is pathognomonic of common extensor origin tendinosis.

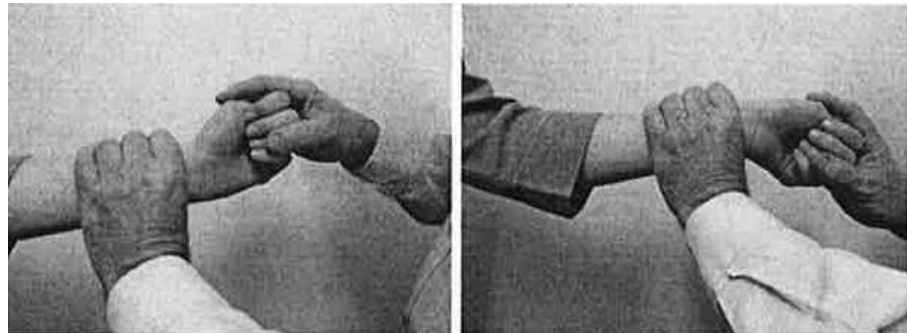
Common Flexor Origin Tendinosis (Two provocative tests)

Golfer's elbow is about 1/10th or 1/20th as common as tennis elbow. There are two provocative or diagnostic tests for golfer's elbow:

1. *The Forceful Gripping Test* – This is the same as the one used for tennis elbow but in this case, it is a positive if pain is elicited at the common flexor origin.
2. *Resisted Wrist Flexion* – conducted in a similar way as resisted wrist extension. The candidate flexes the wrist maximally and the examiner attempts to straighten the wrist against the candidate's resistance.

DeQuervain's

Finkelsteins - Ask the candidate to form a gentle fist, placing their thumb inside the fist. Gently grip the wrist from the outside placing your fingers over the radial edge of the wrist, and move the wrist back & forth from radial to ulnar deviation. Any pain felt by the patient over the radial aspect of the wrist, or a grinding sensation felt by the tester, is regarded as a positive test.



Rotator Cuff Testing

Supraspinatus – ask candidate to fully extend their arms, holding that position, rotate hands downwards like ‘emptying a can’, then bring arms forward approximately 30°. Ask the candidate to lift their arms into the air while the tester provides resistance. Any weakness or pain or inability to provide resistance is regarded as a positive test.

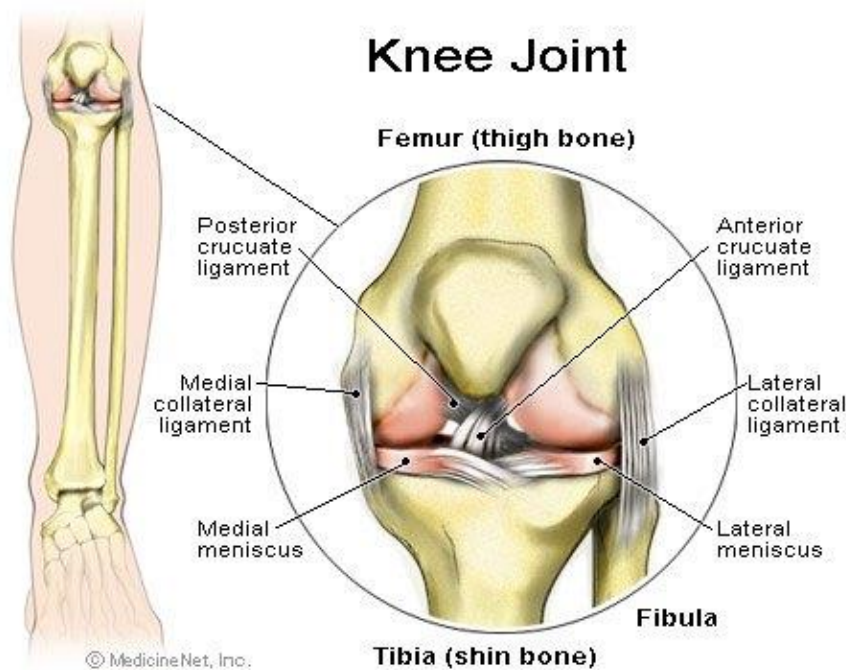


Infraspinatus – ask candidate to tuck their elbows into their sides, with arms out straight. Ask candidate to rotate their forearms out, keeping their elbows tucked into their sides. Ask the candidate to repeat the action while you provide resistance. Any weakness, pain or inability to provide resistance is regarded as a positive test.



Subscapularis – ask the candidate to place both hands behind their back without their fingers touching. Ask candidate to push against your hands while you provide resistance. Any weakness, pain or inability to provide resistance is regarded as a positive test.





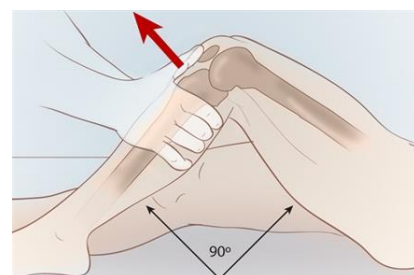
Knee Ligaments If the candidate has indicated in their medical history that they have had a previous knee injury, then an assessment of their Knee Ligaments is undertaken.

All knee ligament assessments are undertaken while candidate is lying supine.

ACL (Anterior Cruciate Ligament)

Anterior Drawer Test - Ask candidate to flex their knee 90°, while the examiner anchors the patient's foot. Examiner's thumbs are placed along the joint line on either side of the patellar tendon and the index fingers are used to palpate the hamstring tendons. Ensuring the candidate is relaxed, the examiner *draws* the tibia straight forward.

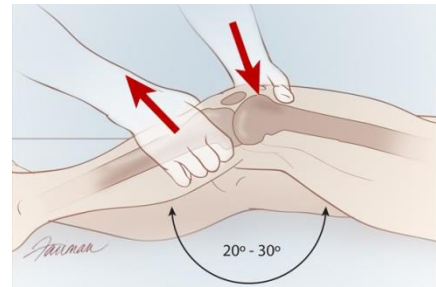
- The examiner is observing for *laxity* and/or *pain* of the ACL



Knees (cont)

Lachman's Test – candidate is supine with their knee passively flexed to approximately 20°-30°. The examiner places one hand behind the tibia, with the thumb of that hand placed over the tibial tuberosity, and the other grasping the patient's thigh. The tibia is pulled forward to assess the amount of anterior motion of the tibia in comparison to the femur.

- The examiner is observing for *laxity* of the ACL.

**PCL (Posterior Cruciate Ligament)**

Posterior Drawer Test - Keeping the knee in the same position as the ACL test, the examiner pushes the tibia posteriorly.

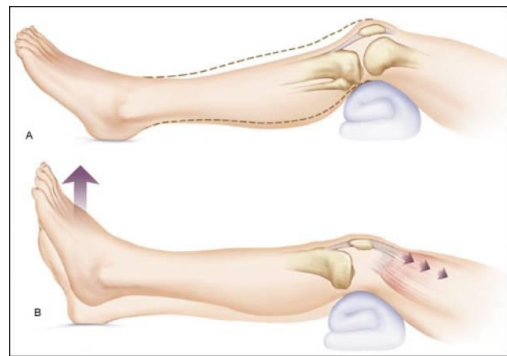
- The examiner is observing for *laxity* and/or *pain* of the PCL



PCL (cont)

An additional assessment of the PCL is diagrammed below. Using a towel or the examiners fists one on top of the other, ask the candidate to rest their knee on top of the towel or fists, then straighten the knee, then slowly bring the knee down to a relaxed position once again.

- The examiner is observing for a “sag” of the tibia, indicating *laxity* of the PCL as the leg is lowered.



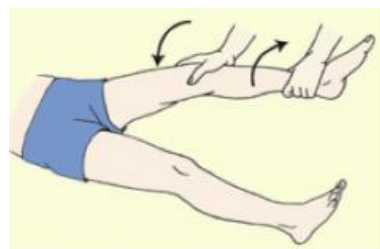
Once in the relaxed position, ask the candidate to straighten the knee. The examiner observes the tibia noting a reversal of the sag.

- A positive test is a “sag” as the knee relaxes into flexion and a reversal of the sag as the knee straightens/extends.

MCL (Medial Collateral Ligament)

Valgus Stress Test - the candidate’s knee is held in full extension and slight lateral rotation. The examiner supports the medial portion of the distal tibia with one hand while the other hand grasps the knee along the lateral joint line. Examiner applies a medial (valgus) force to the knee while the distal tibia is moved laterally keeping the knee in complete extension.

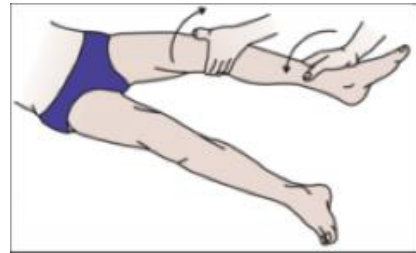
- The examiner is observing for *pain* and *laxity* of the MCL.



LCL (Lateral Collateral Ligament)

Varus Stress Test – the candidate’s knee is in full extension. The examiner supports the lateral portion of the distal tibia with one hand while the other hand grasps the knee along the medial joint line. Examiner applies a lateral (varus) force to the knee while the distal tibia is moved medially keeping the knee in full extension.

- The examiner is observing for pain and laxity of the LCL.



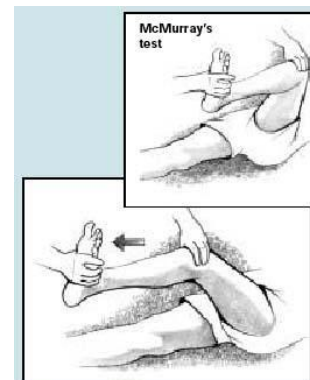
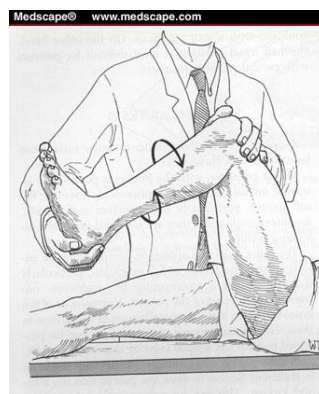
N.B. There are variations of these tests where the valgus and varus strains are undertaken at full extension and at 20-30° flexion to “unlock” the knee. This second manoeuvre is much harder to both do, and interpret.

Knees (cont)

McMurray's (Bragard) Test – The candidate is supine with the knee and hip of the affected leg in maximum flexion. The examiner grasps the patient's knee with one hand and the candidate's foot with the other. Holding the candidate's lower leg in maximum external or internal rotation, the examiner then passively extends the knee into 90° of flexion.

- Pain while extending the knee with the lower leg externally rotated and abducted suggests a medial meniscus lesion; pain in internal rotation suggests an injury to the lateral meniscus. A 'snap' or 'clunk' can sometimes be felt under the fingers caused by the movement of meniscal flaps.

N.B Continuing the extension from 90° the neutral (0° flexion) position corresponds to the Bragard test.



We have found it easy to combine the two tests into the one movement.

Effusion Tests - Tests to assess the swelling of the knee. The examiner uses one hand to press medial to the patella then move the hand towards the hip 2-3 times. Then press firmly down the lateral side of the patella. Observe for a fluid wave bulge just below the medial distal portion or patellar border. This is consistent with a small to moderate amount of fluid. Assess for fluid by placing one hand superior to the patella and exert a slight downward pressure. This will empty any fluid in the suprapatellar pouch into the knee joint. Whilst maintaining pressure, use the other hand to push down on the patella. When there is an effusion, the patella will bounce on and off the underlying bone. A palpated or audible “tap” indicates at least a moderate amount of fluid in the knee. This is the Patella Tap.



Knees (cont)

Patella Apprehension Test - If the candidate has indicated that they have had an injury to their patella, then the patella apprehension test is performed. The examiner places the knee to be examined into full extension. A lateral force is applied to the patella with the examiner’s thumbs, therefore reproducing the dislocation action. Then the candidate is asked to flex the knee.

- The test is positive if the candidate reports pain or is apprehensive of another dislocation in extension or at the latest flexion.
- The test indicates patella dislocation has occurred.



Squat

Ask candidate to stand with their feet shoulder width apart, then come down to a full squat, touching their finger tips to the floor with their feet flat to the floor.

**Wobble Board**

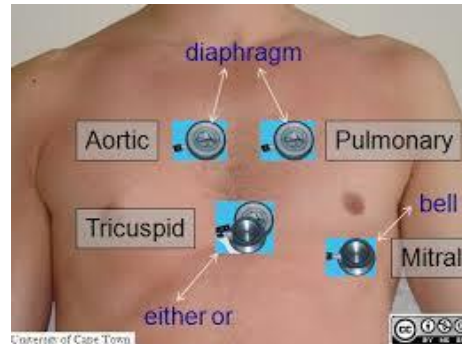
Can be used to assess joint stability of the lower limb joints and balance. For example, if the candidate has had a prior injury to their ankle, then the examiner asks them to step onto the wobble board to assess their current ankle stability. Always be careful, demonstrate first, and do, like the Romberg, near to a wall or couch. The candidate stands back to the wall/couch and the examiner stands in front ready to catch the candidate if they fall. N.B. There is no “standard” for this test as there is no “standard” wobble board.



CARDIOVASCULAR/RESPIRATORY

Heart

Using your stethoscope, auscultate the heart for heart sounds with the candidate sitting. Listen in four positions. Ask the candidate to breathe quietly - if *normal*, document as: *H.S. x 2 NAD (Two Heart Sounds, No Abnormality Detected)*



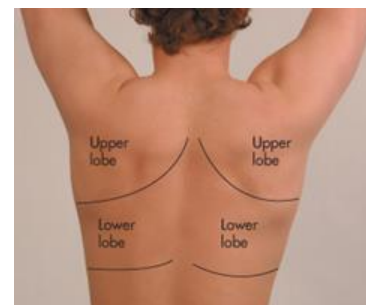
If *abnormal*, then a more extensive examination can be undertaken:

1. Ask the candidate to take a deep breath out, and hold breath. Listen again to all four positions.
2. Ask candidate to lean forward and again take a deep breath out. Listen to two positions: aortic and pulmonary.
3. Ask candidate to lie on their left side, and using the bell of the stethoscope, listen at the mitral area. Then using the diaphragm and/or bell, listen to the tricuspid area.

Website reference: www.easyauscultation.com

Lungs

Using your stethoscope auscultate the lungs and breath sounds from the back. Ask the candidate to take four exaggerated deep breaths, listening to both inspiration and expiration in all four lobes.



Peripheral Pulses Explain to the candidate that you are assessing their circulation. First, palpate for the *Dorsalis Pedis* pulse on the top of the foot, located just lateral to the extensor tendon of the great toe, followed by the *Posterior Tibial* pulse, located by placing fingers behind and slightly below the medial malleolus of the ankle.



Pulses are measured from 0 – 4+:

- 0 = No palpable pulse;
- 1+ = Pulse just palpable;
- 2+ = Pulse is weak;
- 3+ - 4+ = Normal.

N. B. It is not uncommon for some normal people to have one weak or even absent pulse in one or both feet.

Recording example:

	Dorsalis Pedis	Posterior Tibial
Left	0	+
Right	++	+++

As a general guide, if you can feel one or both pulses, the lower limb circulation will be normal. If you cannot feel either pulse, lower limb circulation may be abnormal or impaired.

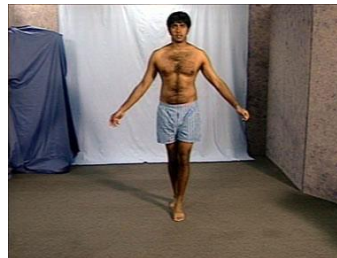
CENTRAL NERVOUS SYSTEM

Balance

Romberg – Candidate stands with their legs straight and bare feet together, heels and toes touching, with their hands by their sides. Ask candidate to close their eyes for 30 seconds (some tests request 60 secs). As a precaution, in order to stop the candidate from falling over and hurting themselves, have the candidate stand back near to a wall or the examination couch. Ensure they aren't touching the wall or couch. The examiner stands in front and if they do fall, uses the wall/couch to support the candidate.



A *Tandem Romberg Test* may be required under some circumstances. It is the Romberg test but, as well, the candidate stands with their feet one in front of the other. It is more difficult!



A *Sharpened Romberg* is the Romberg with the arms crossed in front of the chest.



The *Tandem Sharpened Romberg* is both arms crossed and feet one in front of the other.

- A *positive sign* for all tests, is noted when a swaying, sometimes irregular swaying, and even toppling over, occurs. The essential feature is that the candidate becomes more unsteady with eyes closed. The time at which swaying occurs to the extent the examiner feels is unsafe, is recorded and the candidate asked to open their eyes.

Romberg (cont)

The basis of this test is that balance comes from the combination of several neurological systems, namely proprioception, vestibular input, and vision. If any two of these systems are working the candidate should be able to demonstrate a fair degree of balance. The key to the test is that vision is taken away by asking the candidate to close their eyes. This leaves only two of the three systems remaining, and if there is a vestibular disorder (labyrinthine) or a sensory disorder (proprioceptive dysfunction), the candidate will become much more imbalanced.

Heel-to-Toe or Tandem Walk - A test assessing a candidate's balance, where the candidate is asked to take steps in a straight line, ensuring their heels touch their toes. Minimum of five (5) steps are required.

Whilst the heel toe walk is a neurological test looking for ataxia, especially truncal ataxia caused by damage to the cerebellum, it will in fact be affected by numerous other conditions, for example, intoxication, peripheral neuropathy, spinal cord compression, vestibular conditions and importantly, orthopaedic conditions (in particular, those involving the hip), and lastly, obesity.



If the heel/toe walk is abnormal and the Romberg test is normal, this often indicates an orthopaedic cause for the imbalance noticed on the heel/toe walk.

Coordination

Finger-Nose-Finger test – ask candidate to touch their index finger to their nose, then bring it out to touch your extended index finger. Repeat with both their hands.



In theory, this test is designed to detect *dysmetria* which refers to a lack of coordination or movement typified by being unable to locate the examiner's finger. In other words, the candidate's finger will undershoot or overshoot the examiner's finger. Dysmetria is caused by cerebellar disorders and is a type of ataxia. However, you will also notice tremors when undertaking this test. A tremor which gets worse as the candidate's finger approaches the examiner's finger, is most probably an *essential tremor*. A tremor which you might observe while the candidate is at rest, which gets better as the candidate's finger approaches the examiner's finger, is usually due to *Parkinson's disease*.

Dysdiadochokinesia – ask candidate to hold out their left hand palm facing downwards, then ask them to flip-flop their right hand onto their left hand 3-4 times, then repeat with the right hand.



Dyskiadochokinesia is the clinical term for an inability to perform rapidly alternating movements. Dyskiadochokinesia is present with cerebellar dysfunction. Note that candidates with other movement disorders (eg Parkinson's disease) may have abnormal rapid alternating movement testing secondary to akinesia or rigidity, thus creating a false impression of dysdiadochokinesia.

GASTROINTESTINAL

Abdomen

Liver – asking candidate to place both hands by their sides, gently palpate the right upper quadrant of the abdomen over the liver. The examiner is feeling for the edge of the liver, and if palpated, whether it is smooth or rough.



Palpating the abdomen - two-handed deep palpation
Copyright © 2007 by Lippincott Williams & Wilkins. Instructor's Resource CD-ROM for *Accompany Book: Guide To Physical Examination and History Taking*, 9th edition.

Hernia Examination

Umbilical Hernia – An *Umbilical Hernia* is generally very easily seen as an “outsie belly button”. You can sometimes be fooled by fatty lumps in that region so it is advisable to examine gently by attempting to “reduce” the hernia, or push it back in. If you do, you will often be able to feel your finger go into the tight ring of tissue about the finger. Depending on the size of the umbilical hernia, this can be small, less than 1cm, but may be many centimetres in diameter. Ask the candidate then to strain after removing your finger and you should see the hernia reappear.



Hernias (cont)

Inguinal Hernia – Examination for *Inguinal Hernias* is much more complex. Inguinal Hernias occur in the groin between the ASIS and the symphysis pubis. We examine by asking the candidate to lie down, finding the mid-point between those two anatomical landmarks, placing the fingers gently on that area and asking the candidate to cough. Large hernias can be felt as a coughing pulse or bulging out in this area. It may be possible to reduce a bulging hernia, that is to feel the bulge and push it back in and when you do so, you may even be able to feel the rim of tissue that makes up the hernia defect.

Some clinics and Doctors advise examining a candidate standing up for a hernia, as this increases the intra-abdominal pressure, thus allowing the hernia to be more easily felt. If you are going to examine a candidate standing up for hernia, I would advise you that you first examine the candidate lying down, as some hernias can be difficult to see when the candidate is standing up and then not change very much when they cough or sneeze.

Because hernias are far more common in males than females, and small hernias are hard to find, The Health Advantage uses a second approach in males. This is an internal examination for hernia where the examiner's little finger is placed on the scrotum, envaginating the scrotal skin then following the spermatic cord up to the internal ring. The candidate is then asked to cough and the hernia can be felt coming out pushing onto the little finger or enveloping it.

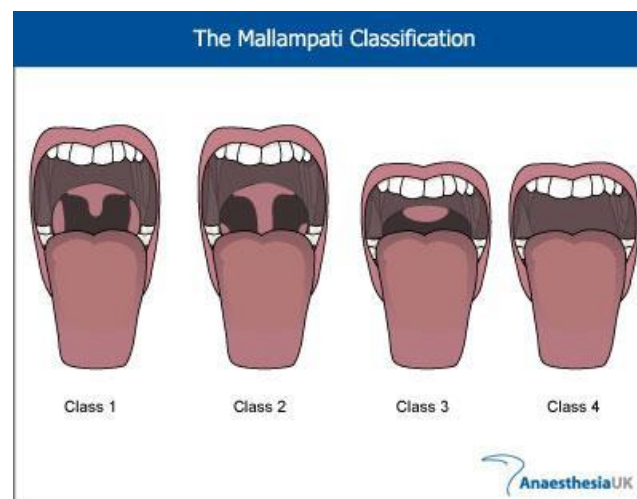
EAR, NOSE AND THROAT

Ear Examination Using the Otoscope, look into the candidate's ears, positioning your hand to prevent the otoscope advancing too far into the canal and perforating the ear drum. Observe the ear canal, and the tympanic membrane.



Mallampatti and Friedman Scores

Palate position had been previously studied and found to be a clinical indicator of Sleep-Disordered Breathing (SDB). This palate classification is based on observations by Mallampati et al, who published a paper on palate position as an indicator of the ease or difficulty of endotracheal intubation by standard anaesthesiologist techniques.



The assessment is based on the patient sticking out their tongue and the observer then notes the relationship of soft palate to tongue (see above). NP The Friedman score is based on the tongue in a neutral, natural position inside the mouth (see diagram below).

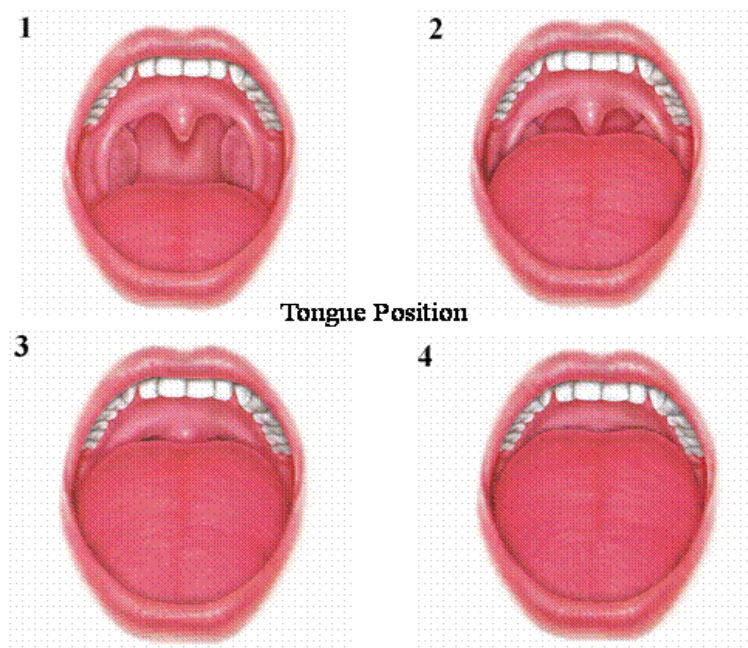
We assess using the Friedman Score as the tongue during sleep is not in a protruded position. Therefore, we chose to assess the tongue inside the mouth as a better indication of sleep disordered breathing.

Friedman (cont)

The *Friedman palate position* grades I through IV.

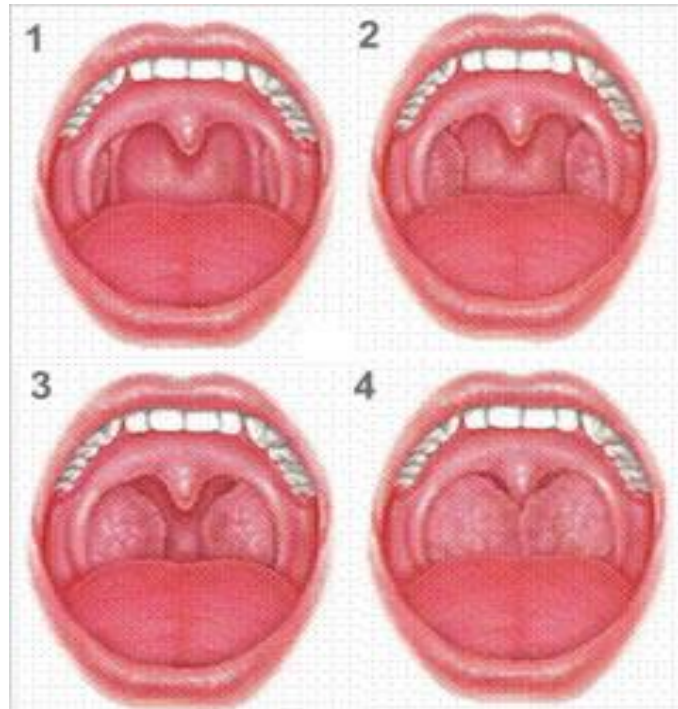
The procedure involves asking the candidate to open their mouth widely without protruding their tongue. A light is then shone into the back of their mouth, observing the palate position. The procedure is repeated 5 times so that the examiner can assign the most accurate level. At times, there can be some variation with difference examinations, but the most consistent position is assigned as the palate grade.

- *Palate grade I* allows the observer to visualise the entire uvula and tonsils or pillars (Fig 1).
- *Palate grade II* allows visualization of the uvula but not the tonsils (Fig 2).
- *Palate grade III* allows visualization of the soft palate but not the uvula (Fig 3).
- *Palate grade IV* allows visualization of the hard palate only (Fig 4).



Tonsils

When the Tonsils are enlarged, these should also be graded. Tonsil size is graded from 0 – 4. Tonsil size 1 implies tonsils hidden within the pillars. Tonsil size 2 implies the tonsils extending to the pillars. Size 3 tonsils are beyond the pillars but not to the midline. Tonsil size 4 implies tonsils that extend to the midline.



VISION***Confrontation visual field exam (Donders test)***

The simple way of setting yourself up for the confrontation test is to use the outstretched hand as a measuring guide between you and the candidate. Open your hand up to its maximum extent, touch your thumb to your nose, your other thumb to your little finger and your second little finger near to the candidate's nose. By doing this, your proprioception will give you a good idea of where the mid plane is between you and the candidate. This will allow you to accurately place your moving fingers at the extremity of that plane and equidistant between you and the candidate.

Ask the candidate to keep their eyes focused on you, position your hands on either side of the candidate's head, equidistant between you and the candidate, and ask the patient to point to the finger that moves. Repeat this in at least six different positions, ensuring that you stay in your own line of vision also. This method tests only the temporal fields.

An alternative approach to test nasal and temporal fields, is for the examiner to ask the candidate to cover one eye and stare at the examiner. When the candidate covers their right eye, the examiner closes their left eye, and vice versa. The examiner will then move a convenient object, such as a tendon hammer, from behind and out of the candidate's visual field forward until the candidate indicates they can see the object. The examiner must estimate if the object should be seen by the candidate. Both nasal and temporal fields can be assessed this way.



Vision (cont)

External Ocular Movements – ask the candidate to keep their head facing forwards, to follow your index finger from left to right.

The candidate is asked to follow a target (your finger) with both eyes as it is moved in each of four directions. The examiner notes the speed, smoothness, range and symmetry of movements and observes for unsteadiness of fixation. Whilst there are nine fields of gaze to test the extraocular muscles: inferior, superior, lateral and medial rectus muscles, as well as the superior and inferior oblique muscles. Practically the four fields - Lateral left & right, superior & inferior, are all that are required.

It can be difficult to test inferior gaze unless you first ask the candidate to tilt their head back.



APPENDIX 1

GLOSSARY OF TERMS

Abduction	A movement which draws a limb away from the median sagittal plane, or midline, of the body.
ACL	<i>Anterior Cruciate Ligament</i> – the cruciate ligament of the knee that crosses from the anterior intercondylar area of the tibia to the posterior part of the lateral condyle of the femur. It contributes to about 90% of total knee joint stability.
Adduction	A movement which brings a part of the anatomy closer to the middle sagittal plane, or midline, of the body.
Assessing Fitness To Drive	Manual published by Austroads and National Transport Commission detailing the medical standards for licensing and clinical management guidelines, for both commercial and private vehicle drivers.
Atrial Fibrillation	Heart rhythm where the normal rhythmical contractions of the cardiac atria are replaced by rapid irregular twitching of the muscular wall that cause the ventricles to respond irregularly.
Carpal Tunnel	A passageway on the palmar side of the wrist, created by the bones and flexor retinaculum of the wrist, through which the median nerve and the flexor tendons pass.
Carpal Tunnel Syndrome	A disorder caused by compression at the wrist of the median nerve supplying the hand, causing pain and paraesthesia's of the radial fingers, sometimes weakness.
Crepitus (Orthopaedic)	The grating, crackling or popping sounds and sensations experienced under the skin and joints. Created when two rough surfaces come in contact. For instance, in the knee, crepitus is felt when the cartilage around the joints has eroded away and the surfaces in the joint start to grind against one another.
DeQuervains Tenosynovitis	Is a tenosynovitis of the sheath or tunnel that surrounds two tendons that control movement of the thumb, the APL and EPB tendons.
Dorsiflexion	The turning of the foot or the toes upwards.

Dynamometer	An instrument used to measure the maximum isometric strength of the hand and forearm muscles, AKA Jamar.
Dysdiadochokinesia	Is the clinical term for an inability to perform rapidly alternating movements. Dysdiadochokinesia is usually caused by cerebellar dysfunction. NB that patients with other movement disorders (e.g Parkinson's disease) may have abnormal rapid alternating movement testing secondary to akinesia or rigidity, thus creating a false impression of dysdiadochokinesia.
Eversion	A turning outward of a joint, away from the centre or midline, such as a turning of the foot outward at the ankle.
Extension	The act of straightening or extending a flexed limb, increasing the angle between two adjoining bones.
Common Extensor Origin Tendinopathy AKA "Tennis Elbow"	This is a degenerative condition of the tendons at the outer aspect of the elbow about the lateral epicondyle. It was previously known as lateral epicondylitis.
Common Flexor Origin Tendinopathy AKA "Golfer's Elbow"	This is a degenerative condition of the tendons at the inner aspect of the elbow with pain located over the medial epicondyle at the elbow. Previously known as medial epicondylitis.
External Auditory Canal	The narrow, tubelike passage running from the outer ear (pinna) to the middle ear (eardrum), approx. 2.5cm.
External Ocular Movements	Precisely the candidate is asked to follow a target with both eyes as it is moved in each of the nine cardinal directions of gaze. The examiner notes the speed, smoothness, range and symmetry of movements and observes for unsteadiness of fixation. These nine fields of gaze test the extraocular muscles: inferior, superior, lateral and medial rectus muscles, as well as the superior and inferior oblique muscles. Practically the four fields - Lateral left & right, up & down, are all that are required.
External Rotation	Turning outwardly or away from the midline of the body.
Finger-nose-finger test	A test of voluntary motor function to assess for dysmetria, coordination and tremors.

Finkelsteins Test	A test used to diagnose DeQuervain’s tenosynovitis in people who have wrist pain.
Flexion	The act of bending a limb; the position that a limb assumes when it is bent; decreasing the angle between two adjoining bones.
Friedman Score	Assessment of the palate position, allowing varying degrees of visualization of the uvula and tonsils. This test is useful in determining a person’s risk of Sleep Apnoea.
Functional Capacity Evaluation	A set of tests, practices and observations that are combined to determine the ability of the evaluated to function in a variety of circumstances, most often employment, in an objective manner
Goniometer	An instrument that either measures an angle or allows an object to be rotated to a precise angular position.
Heart Murmur	An abnormal sound of the Heart, sometimes a sign of abnormal heart valve function.
Heel Toe, or Tandem Walk	A test assessing a person’s balance that assesses for both neurological & musculoskeletal causes of impairment.
Hernia	A term used to describe a bulge or protrusion of an organ through the structure or muscle that usually contains it. In the abdomen, a protrusion of loops of intestine, fat or fibrous tissue through a defect or weakened region of the abdominal wall can occur.
Infraspinatus	A muscle in the shoulder with origin from the infraspinatus fossa of the scapula, with insertion to the great tubercle of the humerus, whose action extends the arm and rotates it laterally.
Infraspinatus Test	Ask person to tuck their arms into their sides, holding arms out straight. Ask person to rotate arms out and in, keeping elbows tucked into sides. Repeat the action while you provide resistance.
Internal Rotation	The turning of a limb about its axis of rotation toward the midline of the body.
Inversion	A turning inward of a joint, towards the centre or midline, such as a turning of the foot inward at the ankle.

Lachman Test	A clinical test used to diagnose injury of the anterior cruciate ligament.
Lateral Flexion	The movement of bending sideways at the waist, or neck; movement of the spine in a lateral direction.
LCL	<i>Lateral Collateral Ligament</i> – a ligament located on the lateral (outer) side of the knee, usually injured as a result of varus force across the knee.
Lung Crepitation's	Clicking, rattling, or crackling noises heard upon auscultation of the lungs, especially during inhalation, AKA "Rales".
MCL	<i>Medical Collateral Ligament</i> – a broad, flat longitudinal ligament attached superiorly to the medial condyle of the femur, inherently to the medical meniscus, and inferiorly to the medial surface of the body of the tibia. Functions to stabilize the knee joint medially, resisting valgus stress.
McMurray Test	A test for injury to meniscal structures of the knee in which the lower leg is rotated while the leg is extended; pain and a cracking in the knee indicates meniscal injury.
Meniscus	In the knee joint are two pads of cartilaginous tissue (medial and lateral) which serve to disperse friction in the knee joint during movement between the tibia and the femur.
Otitis Externa	An inflammation of the outer ear and ear canal.
Otitis Media	An inflammation of the middle ear.
Otoscope	An instrument for inspecting or auscultating the ear.
Patella Apprehension Test	Performed by moving the patella laterally, to test for patella dislocation.
PCL	<i>Posterior Cruciate Ligament</i> – the cruciate ligament of the knee that crosses from the posterior intercondylar area of the tibia to the anterior part of the medial condyle of the femur.
Peripheral Vision	The ability to see objects that are not located directly in front of the eye. It allows people to see objects located on the side or edge of their field of vision.

Phalens sign	Pressure is evoked about the median nerve by flexing the wrist for a time and asking if any pins and needles or numbness is felt. Used for assessing Carpal Tunnel Syndrome.
Plantar Flexion	A toe-down motion of the foot at the ankle.
Pre-Employment Assessment	A medical &/or functional assessment required or accomplished before an employee starts employment.
Pronation	Assumption of a prone position, one in which the ventral surface of the body faces downward. Applied to the hand, the act of turning the palm downwards.
Radial Deviation	Movement of the hand in which the wrist bends towards the radial (thumb) side of the forearm.
Range Of Movement	Refers to the angular distance and direction a joint can move between positions in a plane of movement, for example, between the flexed and the extended positions, abduction and adduction, pronation and supination, inversion and eversion, internal and external rotation.
Rhonchii	A wheezing, whistling or snoring sound heard upon auscultation of the chest, most often caused by partial obstruction of the air channels.
Romberg Test	A test of the body's position sense or proprioception and vestibular function, where the person is asked to stand up, hands by their sides, feet together, eyes closed for a given period. A loss of balance is considered as a positive Romberg test.
Rotation	The act of rotating; a turning or movement of a joint on its axis.
Rotator Cuff	A set of muscles (supraspinatus, subscapularis, infraspinatus and others) and tendons that secures the arm to the shoulder joint and permits the rotation of the arm.
Shoulder Apprehension Test	A clinical manoeuvre used to assess shoulder stability in which the shoulder is placed in 90° abduction and maximum external rotation. Fear of the shoulder dislocating, or "apprehension" on the part of the candidate, indicates prior shoulder dislocation.
Subscapularis	The muscle arising from the subscapular fossa with insertion in the humerus, whose action is to rotate the arm medially

(internal rotation). It also prevents displacement of the humerus.

Subscapularis Test	Ask person to place both hands behind their back, ensuring fingers are not touching. Ask person to push against your hands, while you provide resistance.
Supination	Assumption of a supine position, one in which the ventral surface of the body faces upwards. Applied to the hand, the act of turning the palm upwards.
Supraspinatus	A muscle in the shoulder which runs from the supraspinatus fossa superior of the scapula to the greater tubercle of the humerus, whose action abducts the arm.
Supraspinatus Test	In this case the <i>Empty Can Test</i> , performed with arms extended, rotating hands downwards like emptying a can. Bring arms forward about 30 degrees, then ask the person to lift arms in the air while you provide resistance.
Tinel sign	A sensation of tingling, or of “pins and needles”, felt at the lesion site or more distally along the course of a nerve when the latter is percussed. At the wrist over the median nerve, most commonly used for assessing Carpal Tunnel Syndrome.
Tympanic Membrane	Or Eardrum, is a thin, cone-shaped membrane that separates the external ear from the middle ear, whose function is to convert and amplify vibration in air to vibration in fluid.
Ulnar Deviation	Movement of the hand in which the wrist bends toward the ulnar (little finger) side of the forearm.
Valgus	The more distal of the two bones forming a joint of an extremity deviates away from the midline, for example, genu valgus or knock knee. The tibia deviates outwards (laterally).
Varus	This refers to a deformity in the joint of an extremity where the more distal of the two bones forming the joint deviates toward the midline, for example, genu varus at the knee or bow leg.
Wobble Board	A piece of equipment used to assess ankle stability. A large circular piece of material with a non-slip surface, and a small semi-sphere of material attached to the underside.

APPENDIX 2

Name: _____ D.O.B: _____ Date: _____

1 Ishihara 24 Plate 1997 Test

2	PLATE	3 Normal Person	4 RESULT		5 Person Red/Green Deficiency	6 Person Total colour blindness		
			Indoors	Outdoors				
1		12			12	12		
2		8			3	X		
3		29			70	X		
4		5			2	X		
5		3			5	X		
6		15			17	X		
7		74			21	X		
8		6			X	X		
9		45			X	X		
10		5			X	X		
11		7			X	X		
12		16			X	X		
13		73			X	X		
14		X			5	X		
15		X			45	X		
					Protan		Deutan	
					Strong	Mild	Strong	Mild
16		26			6	(2) 6	2	2 (6)
17		42			2	(4) 2	4	4 (2)

The mark X shows that the plate cannot be read. The numerals in parenthesis show that they can be read but they are comparatively unclear.

COLOURED WIRE TESTING: Number correctly identified: /20 coloured wires.

APPENDIX 3

Normal Joint Range of Movements		
Wrists	Flexion	0-60°
	Extension	0-60°
	Radial Deviation	0-20°
	Ulnar Deviation	0-30°
Elbow	Pronation	0-80°
	Supination	0-80°
	Flexion	0-140°
	Extension	0°
Shoulders	Flexion	0-170°
	Extension	0-50°
	Internal Rotation	0-90°
	External Rotation	0-90°
	Adduction	0-50°
	Abduction	0-170°
Cervical	Flexion	0-50°
	Extension	0-50°
	Lateral Flexion	0-45°
	Rotation	0-80°
Ankles	Plantar Flexion	0-60°
	Dorsiflexion	0-15°
	Inversion	0-30°
	Eversion	0-20°
Straight Leg Raise		0-90°
Knees	Flexion	0-140°
	Extension	0°
Hips	Flexion	0-130°
	Extension	0-20°
	Internal Rotation	0-40°
	External Rotation	0-45°
Thoracolumbar	Flexion	0-90°
	Extension	0-25°
	Lateral Flexion	0-20°
	Rotation	0-30°

APPENDIX 4

PEM	Pre-Employment Medical
ACL	Anterior Cruciate Ligament
PCL	Posterior Cruciate Ligament
LCL	Lateral Collateral Ligament
MCL	Medial Collateral Ligament
ANT	Anterior
POST	Posterior
MED	Medial
LAT	Lateral
NAD	No Abnormality Detected
Ⓝ	Normal
°	Absent
☑	Normal
HS x 2 NAD	Dual Heart Sounds, No Abnormality Detected
L)	Left
R)	Right
+ve	Positive
-ve	Negative
PIP	Proximal Interphalangeal Joint
DIP	Distal Interphalangeal Joint
MCP	Metacarpophalangeal Joint
IP	Interphalangeal Joint (of the Thumb)
IR	Internal Rotation
ER	External Rotation
INV	Inversion
EV	Eversion
ADD	Adduction
ABD	Abduction

SLR	Straight Leg Raise
FLEX	Flexion
EXT	Extension
PRN	As Required
FROM	Full Range Of Motion
TxLx	Thoracolumbar
Cx	Cervical
VF	Visual Fields
EOM	Extra Ocular Movement
HL	Hearing Loss
NIHL	Noise Induced Hearing Loss
TM	Tympanic Membrane
UDS	Urine Drug Screen
UA	Urinalysis
NC	Neck Circumference
Hx	History
Tx	Treatment
Ix	Investigations
PMHx	Past Medical History
PSHx	Past Surgical History

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