

Move

Move

There are three stages to assessing movement. The words used to describe a particular movement are shown in Table 35.3. **Active**. Ask the patient to move the joint within the limits of their pain. **Passive**. Move the limb or joint yourself. Record the range of movement in 'degrees' (a goniometer may be helpful). Comparison of active and passive range allows the three causes of loss of range of movement to be distinguished. In limitation caused by pain or stiffness the ranges are the same but one is painful. In weakness passive range is greater than active. **Stability**. Stability has a static and a dynamic component: static tests assess the integrity of the ligaments and joint (bone) surfaces; dynamic tests assess the integrity and functions of the muscles and tendons. Ask the patient to move the joint actively through its range of motion while you try to stop the movement. Record power using the Medical Research Council (MRC) grading system as illustrated in Table 35.4. Consider the muscles that drive each movement, the peripheral nerves that supply them and the nerve root values (Table 35.5). In the following sections, in addition to the approach of 'look, feel, move', we have included details of special tests for each joint as well as neurological examination of the limb. The peripheral nerve examination comprises sensory and motor testing, reflexes, tone and coordination and proprioception.

TABLE 35.2 Swelling: an acronym for history and examination of a lump. **S**tart Did it appear after trauma or gradually on its own? **W**here Anatomical site and layer (skin, fat, muscle); does it move in relation to these? **E**xternal features **S**ize, surface and definition of margins **L**ymph nodes Are the local ones enlarged? **L**iquid Is it fluctuant? Can it be transilluminated? **I**nternal features Is it hard? Is it tender? **N**oise Is there a thrill? Is there a bruit? **G**eneral Examination of the whole patient for general lumps movement. **F**lexion Forward or anterior movement of the trunk or limb **L**ateral flexion Bending of the forward-facing head and trunk to either side **E**xtension Backward or posterior movement **A**bduction A movement away from the midline of the body **A**dduction A movement towards the midline of the body **I**nternal rotation Rotation towards the midline of the body **E**xternal rotation Rotation away from the midline **S**upination Movement of the forearm so that the palm faces anteriorly **P**ronation Movement of the forearm so that the palm faces posteriorly **C**ircumduction A combination of flexion, abduction, extension and adduction without rotation **I**nversion Movement of the foot that directs the sole of the foot medially **E**version Movement of the foot that directs the sole of the foot laterally **R**etraction Backwards movement of the head, jaw or shoulders **TABLE 35.4 The Medical Research Council grading system of muscle power.** **Grade** **Description** **0** No movement **1** Flicker of movement **2** Active movement with gravity elimination **3** Active movement against gravity **4** Active movement against resistance but power less than full **5** Normal power

Root level Sensation **C5** Lateral upper arm **C6** Lateral forearm **C7** Middle finger **C8** Little finger
T1 Medial forearm **L1** Anterior thigh **L2** Anterior thigh/groin **L3** Anterior and lateral thigh **L4** Medial

leg and foot L5 Lateral leg and first dorsal web space Extensor hallucis longus S1 Lateral and plantar foot S2–S4 Perianal

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Range of motion is limited in the thoracic spine: Forward bending test (Figure 35.6). Ask the patient to bend forwards to touch their toes: structural scoliosis : a rib hump will increase in size (bulge posteriorly on the thoracic convex side) as the patient bends forwards; this is diagnostic of idiopathic thoracic scoliosis (rotatory deformity); functional scoliosis : the spine straightens as the patient bends forwards and no rib hump is visible; this flexible deformity is secondary to other abnormalities such as abnormal leg lengths and muscle spasm in the lumbar region. Lateral bending . This can be used to assess the flexibility of a scoliosis. Radiographs can be taken in this position to supplement the assessment. Move

The wrist can be moved into flexion and extension, and ulnar and radial deviation. Wrist . Extension is tested by asking the patient to push the hands together into a 'prayer' position (Figure 35.13a If there is loss of extension, the palms will not meet and/ or one forearm will be dropped. Palmar flexion is tested in a similar fashion but with the hands pointing down and the back of the hands in contact (Figure 35.13b). Ulnar and radial deviation are tested by taking the patient's hand in your own and moving the hand into these directions. Hand . A general screening assessment is to ask the patient to roll up their fingers from full extension to full flexion. This will reveal a trigger finger. Move

Differentiate between movements of the shoulder joint and scapulothoracic movement of the scapula on the chest wall. Patients with a painful shoulder will commonly move from the scapulothoracic joint. Stabilise the scapula by placing the thumb over the coracoid process and the fingers of the same hand over the spine of the scapula. Start in the 'neutral - position' with the arms by the sides, elbows extended and the palms facing forwards. Note any pain throughout the range of movement (Figure 35.23). Forward flexion . Ask the patient to raise their hands in front to touch the ceiling while keeping the elbows extended (0–180°). Extension . Ask the patient to extend both arms behind (0–30°). Abduction . Shoulder abduction involves the glenohumeral joint and scapulothoracic movement. The first 60° of movement is mainly at the glenohumeral joint. Beyond this the scapula begins to rotate on the thorax and final movements are almost entirely scapulothoracic. Raise the arms sideways until the fingers point to the ceiling (180°). Adduction . Ask the patient to touch their other shoulder tip. Internal rotation . Ask the patient to touch their back with the dorsum of the hand and to raise their hand up the back as high as possible (normal range is thoracic spine level T7–9). External rotation . With the arms by the sides, bend the elbows to 90° and rotate the forearms to the mid-prone position. Ask the patient to separate their hands as much as possible (0–40°).

(d) (e) Figure 35.23 Movements of the shoulder: (a) forward flexion; (b) extension; (c) adduction; (d) internal rotation; (e) external rotation.

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The hip joint can be moved into flexion, extension, abduction and adduction, and internal and external rotation (Figure 35.27). True hip movement ends when the pelvis begins to move. To detect true hip movement, simultaneously place a finger/hand on the ASIS contralateral to the hip being examined. Remember to compare both sides. Passive movement Hip flexion (120–0°) when lying supine The patient is asked to lie on their back and then roll themselves into a ball, flexing the hips and the spine fully . A comparison of the flexion of the two hips can be made in this position. The patient is then asked to hold onto the knee of the 'bad' leg with both hands (thereby fixing the pelvis in flexion) and the other leg is allowed to extend down onto the couch. A note is made of any fixed flexion deformity (inability of the thigh to come down onto the couch). This 'good' hip is then returned to full flexion and the patient grasps that knee while dropping the other, 'bad', hip into extension. This modified Thomas's test is the most comfortable and accurate way of measuring flexion and extension of the hip, minimising movement of the painful hip (Figure 35.28). Hip extension (0–10°) when lying in a prone position Hip extension can be measured by asking the patient to roll onto their front and extend the hip. Rotation Internal rotation (45°) . With the hip flexed to 90° and the knee in 90° of flexion, hold the front of the knee with one hand and the foot with the other. Internally rotate the hip (the foot goes outwards), then externally rotate the hip (the foot goes in). The angle that the tibia makes with the vertical indicates the range of movement. Pain at the extremes of movement suggests inflammation in the hip. Abduction (40°) . The hip should be abducted by moving the leg away from the midline with the other hand on the patient's pelvis to detect any tilt in the pelvis.

(c) Figure 35.28 Modified Thomas's test for assessing a fixed flexion deformity. A fixed flexion deformity of the right hip is indicated by an inability to fully straighten the right leg (arrow).

(d) Figure 35.27 Hip movements: (a) internal rotation; (b) external rotation; (c) adduction; (d) abduction.

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The knee moves principally in flexion (0–135°) and extension (from 0 to –10°) (Figure 35.30). Assess hyperextension by placing one of your hands on the anterior aspect of the distal femur. Now lift the distal tibia with the other hand. Measure the angle or the height that the heel can be lifted o

ff the couch before the knee starts to move. Perform a lag test to assess the integrity of the extensor mechanism. The patient is asked to lift the whole leg up off the bed (10°) with the knee straight. They are then asked to bend the knee and then try to straighten it again with the leg still held in the air. If they are unable to re-straighten the knee they have a positive lag. This indicates significant weakness of the quadriceps mechanism. In the presence of an apparent fixed flexion deformity of the knee (seen in osteoarthritis), decide whether this is arising from the knee or the hip joint. To differentiate, sit the patient up with the knees hanging over the edge of the couch; this obliterates the effect of any hip flexion deformity. Passively try to extend the knee fully. With a flexion deformity of the knee, this is not possible.

(c) Figure 35.31 Assessing the medial (a, b) and lateral (c, d) collateral ligaments.

Move

The movements of the foot and ankle are linked via the ankle, subtalar and midfoot joints. Remember the acronyms PAED – pronation, abduction, eversion and dorsiflexion – and SAPI – supination, adduction, plantarflexion and inversion. These are the two common general foot deformities.

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