

Look

Look

The inspection begins as soon as you enter the examination room. Look for any walking aids. Remember to look at the whole patient and not just at the joint of interest. For example: /uni25CF look at the hands for rheumatoid arthritis; /uni25CF look at the eyes for Horner's syndrome; /uni25CF look for any obvious upper or lower limb or spinal deformity . Gait The gait cycle is all of the activity between the initial contact of the foot with the ground and the succeeding initial contact of the same limb. There are two main stages: the stance phase (60%) and the swing phase (40%). Ask the patient to stand, and inspect from the front, side and back. Then, ask the patient to walk using any walking aids. Some of the types of limp that might be present are described in Table 35.1 . Focused inspection Adequately expose the joint above and below . Expose the opposite limb for comparison. Make sure that the patient is comfortable. It may be easier for you and the patient if they Alan Graham Apley , 1914–1996, Director of Orthopaedic Surgery , St Thomas' Hospital, London, UK. As a consultant also at Rowley Bristow Orthopaedic Hospital, he conducted the most popular orthopaedic postgraduate course for the FRCS examina 'Pyrford Orthopaedic Course'. Johann Friedrich Horner , 1831–1886, Professor of Ophthalmology , Zurich, Switzerland, described this syndrome in 1869. Friedrich Trendelenburg , 1844–1924, Professor of Surgery successively at Rostock (1875–1882), Bonn (1882–1895) and Leipzig (1895–1911), Germany . The Trendelenburg position was first described in 1885. a couch is used, make sure that it is in the centre of the room (not against the wall) so that you can work on both sides of the patient. Remember that all joints are covered by an envelope of soft tissues and skin. Look at the skin for: /uni25CF surgical scars (arthroscopy scars may be difficult to see); /uni25CF bruising (may indicate recent injury or a bleeding disorder); /uni25CF erythema (e.g. cellulitis); /uni25CF ulcers (e.g. arterial, vascular or neuropathic); /uni25CF rashes; /uni25CF sinuses (e.g. secondary to osteomyelitis); /uni25CF hair loss and the presence or absence of sweating; /uni25CF pigmentations or raised lesion (e.g. café-au-lait spots or neurofibromas). Look at the soft tissues for: /uni25CF swelling (e.g. may indicate a joint effusion); - /uni25CF lumps (consider which tissue layer they are arising from); /uni25CF muscle wasting (e.g. may be secondary to disuse atrophy , neuropathy); /uni25CF muscle fasciculation (lower motor neurone pathology). Look at the bones for: /uni25CF abnormal limb alignment – comparison with the other side may be helpful; /uni25CF deformity .

TABLE 35.1 Types of limp. Cause Pathogenesis Long Osteoarthritis (in other leg) Head dips. Cadence dash/dash Incoordinated Cerebral palsy Muscle weakness Osteoarthritis hip Pain Osteoarthritis hip Stiff Arthrodesis hip Limp Pathology Antalgic Hip joint arthritis Trendelenburg Weakness of hip abductors High-stepping gait Foot drop secondary to common peroneal nerve palsy Spastic Cerebral palsy Ataxic Cerebellar pathology

Look

Ensure that the front and the back from the neck to the gluteal cleft can be visualised. Note skin markings (e.g. café-au-lait spots, hairy patches). These may suggest occult neurology or bony pathology. Roy Glenwood Spurling, 1894–1968, American neurosurgeon, first described the Spurling test with William Beecher Scoville. /uni25CF Front . Check for asymmetry of the shoulder and ribcage suggesting scoliosis. /uni25CF Back . Look for a difference in the height of the iliac crests (pelvic tilt). Assess for coronal plane deformity, such as scoliosis (lateral curvature of the thoracic spine with rotation). A rib hump suggesting a structural scoliosis may be visible. /uni25CF Side . Assess for sagittal plane deformity, such as an increased kyphosis.

and bending (d) .

Look

/uni25CF Back . Check the skin at the base of the spine for hairy tufts and dimples (underlying spina bifida). Prominence of the spinal muscles on one side may be the result of muscle spasm secondary to pain. /uni25CF Side . The lumbar spine has a smooth concavity known as the lumbar lordosis (normal range is 40–60°). Muscle spasm is a cause of loss of the normal lordosis. Feel for any 'step-off' in the spinous processes. This may indicate forward slippage of one of the vertebrae on another. Movement occurs in flexion, extension, lateral bending and rotation (Figure 35.7). Record the motion in each plane in degrees. Remember that a significant portion of lumbar flexion is achieved through the hip joint. /uni25CF Forward flexion . This is a measure of lumbar flexibility . The skin of the lumbar spine stretches as the patient bends forwards. To measure flexion, place the tip of your thumb over the T12/L1 junction and the tip of your index finger of the same hand over the lumbosacral junction. Ask the patient to bend forwards and touch the toes (normal range 40–60°). Measure the distance by which your thumb and the tip of your index finger separate. /uni25CF Lateral bending . Ask the patient to slide their right hand down the outside of their right leg and then their left hand down the outside of their left leg. Note the distance that each hand moves down that side of the thigh. /uni25CF Rotation . Stand behind the patient and hold their pelvis still with both hands. Ask the patient to twist around and look over their shoulder. Note the angle that the shoulder girdle forms with the pelvis (range 3–18°). Special tests /uni25CF Lasègue's straight leg raise test (Figure 35.8). This test increases tension along the sciatic nerve (L5 and S1 nerve roots). With the patient supine, elevate the leg with the knee bent to check pain-free movement of the hip. Then, straighten the knee and note the angle at which the hamstrings allow the hip to flex. Finally, allow the hip to extend until tension is removed from the hamstring muscles and then the ankle is dorsiflexed firmly (but without excessive force), which in turn pulls on the sciatic nerve. If the patient experiences pain running down the leg, then the test is positive. Charles Ernest Lasègue, 1816–1863, Professor of Medicine, University of Paris, and Physician, La Salpêtrière, Paris, France. This test was described by Lasègue's student, who named it after his teacher. - -

Figure 35.6 (a–c) Forward bending test. (a) (b) Figure 35.7 Lumbar examination; lateral bending (a) and rotation (b) .

/uni25CF Contralateral stretch test . Elevate the asymptomatic leg; if pain is reproduced in the other leg the test is considered positive.

(b) (c) Figure 35.8 (a-c) Lasègue's straight leg test.

Look

Inspect the posture of both hands. A nerve lesion will produce a specific resting position (e.g. an ulnar nerve lesion will produce clawing of the little and ring fingers). /uni25CF Skin . Assess for scars, discoloration (café-au-lait spots, erythema) and loss of hair. The nails may reveal systemic disease (e.g. psoriatic pitting). Look for tight bands in the palm (Dupuytren's contracture). Loss of sweating is seen in complex regional pain syndrome. /uni25CF Soft tissue . Centrally located swellings at the wrist may indicate a ganglion arising from the wrist joint itself; de Quervain's tenosynovitis may present with a swelling around the radial styloid. /uni25CF Muscle wasting . Check for thenar, hypothenar (Figure 35.9) and intrinsic muscle wasting. To assess thenar eminence wasting, place the hands side by side with the thumbs upwards and look down and compare the - thenar regions. Patterns of muscle wasting are shown in Table 35.6 . /uni25CF Bones . Look for bony deformity (dinner fork deformity , Colles' fracture). Typical bony deformities are described in Table 35.7 .

TABLE 35.6 Patterns of muscle wasting in the hand. Thenar wasting Median nerve palsy (C8)
Hypothenar wasting Ulnar nerve palsy (T1) Intrinsic wasting Ulnar nerve palsy (T1)

(b) Figure 35.9 Thenar (a) and hypothenar (b) wasting.

Look

/uni25CF Skin . Check the extensor surface for signs of psoriasis. /uni25CF Soft tissues . Look for any swellings, e.g. olecranon bursa, rheumatoid nodules, gouty tophi. /uni25CF Muscle wasting . Examine the biceps and triceps muscle bulk. Note that compression of the ulnar nerve at the elbow leads to wasting distally in the hypothenar eminence and intrinsic muscles of the hand – assess the hand for the presence of clawing and wasting. /uni25CF Bone . With the elbow in extension, look at the axis between the upper arm and forearm. There is a physiological valgus ('carrying angle') of 9–14° (2–3° greater in women) (Figure 35.19). This angle allows the elbow to be tucked into the waist depression above the iliac crest: /uni25CF cubitus varus (gun-stock deformity): the carrying angle is reversed, secondary to a malunited supracondylar fracture; /uni25CF cubitus valgus : the carrying angle is increased, caused by malunion of a distal humeral fracture; /uni25CF hyperextension : there is normally a physiological hyper extension of the elbow (5°).

Figure 35.19 Carrying angle of the elbow illustrating the normal cubitus valgus.

Look

Assess the attitude of the limb. /uni25CF Skin . Check for surgical scars. An anterior scar is used for the deltopectoral approach. At the side, the deltoid splitting approach and lateral arthroscopic portals may be seen. Posteriorly , arthroscopic portal sites can be seen. /uni25CF Soft tissues . Wasting of the deltoid muscle is commonly seen after shoulder dislocation when there is a temporary loss of function of the axillary nerve that supplies it. The rotator cuff comprises four muscles: supraspinatus, infraspinatus, subscapularis and teres minor. Wasting of these muscles

may occur following a rotator cuff problem. fracture of the middle third clavicle is the most common cause. A dislocation may be suspected by a loss of normal shoulder contour. The more common anterior dislocation often presents with an anterior bulge and a squared-off shoulder.

Look

With the patient standing, look at the front, side and back of the hip. Look around the room for walking aids and heel raises in the shoes. /uni25CF Skin . Look for scars and sinuses. /uni25CF Soft tissues . Muscle wasting may be present as a consequence of hip arthritis or primary muscle or neurological disease. /uni25CF Bone . Look at the posture of the limb and assess for adduction deformity; fixed adduction may be present in severe osteoarthritis and cerebral palsy , and makes the leg appear short because the pelvis is tilted (apparent shortening). Richard J Hawkins , contemporary , Canadian orthopaedic surgeon, based in Colorado and a founding member and Past President of the American Shoulder and Elbow Surgeons. Georg Clemens Perthes , 1869–1927, Professor of Surgery , Tübingen, Germany , described osteochondritis of the femoral capital epiphysis in 1910. Hugh Owen Thomas , 1834–1891, general practitioner, Liverpool, UK. He is regarded as the founder of orthopaedic surgery although never holding a hospital appointment, preferring to treat patients in their own homes. He introduced the Thomas splint in 1875. /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF

children and adults. Children Adults Developmental dysplasia of Primary osteoarthritis the hip Secondary osteoarthritis Transient synovitis of the In /f_ l ammatory arthritis hip Avascular necrosis Perthes' disease Femoroacetabular impingement Septic arthritis and osteomyelitis Labral tears Slipped capital femoral Referred pain epiphysis Juvenile idiopathic arthritis

Look

Look at the front, sides and back of both knees and for any walking or mobility aids or external appliances. /uni25CF Skin . Check for scars. /uni25CF Soft tissues . Look for wasting of the quadriceps and swelling in front of and behind the knee. /uni25CF Bone . Look for overall alignment (varus or valgus deformity). Measure the intermalleolar distance if a valgus deformity is present. With varus deformity , measure the distance between the medial aspects of the knees. From the side of the knee, look for fixed flexion or recurvatum (hyperextension). Gait Look for antalgic gait (osteoarthritis) and varus thrust (collapse of the knee into more varus as weight is taken on that leg). Look

Ask the patient to stand and assess the overall limb alignment. Assess pelvic obliquity , LLD (and its level), valgus/varus deformities of the knee and rotational alignment. Check for contractures of the hips and knees. Now focus your attention on the foot itself: /uni25CF Foot shape . Assess the overall shape of the forefoot from the front. From the side, look for the normal medial arch (Figure 35.35a). The hindfoot is best appreciated from behind. Now look at the vertical relationship between the Achilles tendon and the calcaneus (normal heel valgus of 5–7°). Look from behind and count the number of toes that can be seen. The 'too many toes' sign demonstrates increased forefoot abduction (pes planus [flat foot]) and a splayed forefoot. Foot shapes that may be encountered include neutral foot (no overall deformity), skew foot (hind - foot valgus and forefoot adduction), metatarsus adduc - tus (neutral hindfoot and adduction of the metatarsus), pes planus

(collapse of the medial arch) and pes cavus or high arch (increased medial arch) (Figure 35.35b). The possible causes of pes planus and pes ca vus are shown in Summary boxes 35.10 and 35.11 , respectively . /uni25CF Skin . A bunion or red swelling on the medial aspect of the metatarsophalangeal joint (MTPJ) is common. This is an area of inflamed skin with an underlying subcutane - ous bursa and a joint osteophyte. Systemic manifestations include gouty tophi and thin fat pads under the metatarsal heads as seen in rheumatoid arthritis. Corns are callosi - ties which form where toes rub against the inside of shoes. Remember to assess the appearance of the nails. - /uni25CF Soft tissues . Swelling may indicate soft-tissue or joint pathology . Muscle wasting is most commonly seen on the dorsum of the foot and in the clefts between the metatar - sals. If this is present, a full neurological examination of the upper and lower limbs should be performed, including the spine. /uni25CF Bones . Look for any bony prominences or exostoses. Common forefoot deformities are shown in Table 35.12 .

Figure 35.34 (a, b) Patellar tracking.

Antoine Bernard-Jean Marfan , 1858–1942, physician, Hôpital des Enfants-Malades, Paris, France, described this syndrome in 1896. Jean Martin Charcot , 1825–1893, physician, La Salpêtrièr e, Paris, France. rance, later became Professor of Pathological Anatomy in the Faculty of Medicine, and finally , Pierre Marie , 1853–1940, neurologist, Hospice de Bicêtre, Paris, F in 1918, Professor of Neurology . Howard Henry T ooth , 1856–1925, physician, St Bartholomew’s Hospital and the National Hospital for Nervous Diseases, London, UK, described peroneal muscular atrophy in 1886, independently of Charcot and Marie. Richard von Volkmann , 1830–1889, Professor of Surgery , Halle, Germany . Causes of pes planus /uni25CF /uni25CF /uni25CF /uni25CF Summary box 35.11 Causes of pes cavus (Figure 35.35b) /uni25CF /uni25CF /uni25CF /uni25CF Gait Look for a high-stepping gait (foot drop), painful (antalgic) gait (ankle and foot joint pain) and a short propulsive phase (forefoot pain). Footwear Inspect the footwear. This may reveal areas of abnormal weight-bearing. With normal wear of the sole, a corner is typically worn o ff the posterolateral aspect of the heel (heel strike). In addition, there may be a circular wear pattern under the ball of the big toe (toe-o ff phase). /uni25CF External appearance . Look at the materials used, the metal supports and heel raise, depth and width. /uni25CF Internal appearance . Look at the insoles, arch sup - ports and heel cups.

(b) Figure 35.35 (a) Normal medial longitudinal arch of the foot. cal and radiological appearance of pes cavus. TABLE 35.12 Common forefoot deformities. Deformity Metatarsophalangeal joint Claw toe Hyperextension Hammer toe Normal Mallet toe Normal Hallux valgus or varus Valgus or varus position Normal variant Hyperlaxity syndrome, e.g. Marfan’s syndrome Tarsal coalition – rigid and painful /f_l at foot (see Figure 35.40a) Tibial posterior dysfunction Spinal anomalies, e.g. spina bi /f_i da Hereditary sensorimotor neuropathies, such as Charcot– Marie–Tooth disease Charcot foot (e.g. neuropathic foot) Post-compartment syndrome (e.g. Volkmann’s ischaemic contracture)

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