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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.

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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

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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 .

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. -

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.

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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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 off 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-off 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 supports and heel cups.

(b) Figure 35.35 (a) Normal medial longitudinal arch of the foot. (b) Normal 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 bifida Hereditary sensorimotor neuropathies, such as Charcot– Marie–Tooth disease Charcot foot (e.g. neuropathic foot) Post-compartment syndrome (e.g. Volkmann's ischaemic contracture)

Revision #1

Created 2025-12-31 15:14:26 UTC by Omar Ayman

Updated 2025-12-31 15:14:26 UTC by Omar Ayman