Intoeing gait

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Intoeing is defined as a negative foot progression angle and results from one or more lower limb torsional anomalies (Figure 44.1 and Table 44.2). Persistent femoral neck anteversion presents clinically with excessive internal rotation at the hip joint, which is best assessed with the patient pr one (Figure 44.2a). All femurs are anteverted at birth but as the femur lengthens it rotates with spontaneous improvement in the anteversion. If, by 10–12 years, a persistent deformity is associated with functional di ffi culties, corrective osteotomy may be justified. In such cases, the child has no ability to externally rotate the extended hip. In others, compensatory external tibial torsion may develop, in which case the foot progression angle will be normal but the child may have symptoms of the miserable malalignment syndrome, including knee pain and feelings of instability . Internal tibial torsion is assessed by the thigh–foot angle and is commonly associated with physiological tibia vara in infants (Figure 44.2b). Spontaneous correction occurs by age 4, as the tibia rotates with growth. Metatarsus adductus (Figure 44.2c) is usually flexible and corrects by age 2–4 years. For the more rigid foot, stretching, Surgical release is rarely indicated.

TABLE 44.2 Common sites and causes of intoeing gait in childhood. Site Cause Femur/hip Persistent femoral neck anteversion Tibia Internal tibial torsion Foot Metatarsus adductus o o

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- 20 Figure 44.1 Foot progression angle: a positive angle represents an extoeing gait; a negative angle, an intoeing gait. (a) (a) (b) External Internal thigh–foot thigh–foot angle angle (c) Normal Metatarsus adductus Figure 44.2 Assessment of the torsional pro /f_i le: all assessments are done with the child prone. (a) Femoral neck anteversion measured as the range of internal hip rotation with the hip extended and the knee /f_l exed. Craig’s test measures the degree of internal rotation present when the greater trochanter is at its most prominent (also called the trochanteric prominence test). (b) The thigh–foot angle measures the angle between the relaxed hindfoot and the thigh. (c) The bean- shaped foot of metatarsus adductus viewed from above: a curved lateral border with/without a medial crease.

Extoeing is less common but results from relative femoral retroversion, external tibial torsion or flexible flat feet. The child may walk late because of poor balance associated with the foot posture and overall alignment. Gait improves with growth/time. T oe walking is a phase in normal gait development. If the gait does not mature to a heel–toe pattern by 3 years, physiotherapy may help, and older children benefit from surgical lengthening of a contracted gastrocsoleus complex, if it is present. If toe walking starts after walking age, a spinal or neuromuscular aetiology such as a tethered cord or a muscular dystrophy must be considered; in the unilateral case, an orthopaedic cause for a short leg, such as a dislocated hip, must be excluded. Intoeing gait

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