

NOTES ON HOW CHILDREN WALK (IN-TOEING & OUT-TOEING)

KAPI'OLANI ORTHOPAEDIC ASSOCIATES

Pediatric Orthopaedics

Spine Deformity

Sports & Dance Medicine

Young Adult Hip Preservation

1319 Punahou Street
Suite #630
Honolulu, Hawaii 96826
Phone: (808) 945-3766
FAX: (808) 942-9837
www.kapiolani.org

Robert C. Drukin, M.D.
Division Head
Pediatric Orthopaedics
Associate Clinical Professor
Department of Surgery, John A.
Burns School of Medicine,
University of Hawaii

William E. Burkhalter, M.D.
Pediatric Orthopaedic Surgeon
Assistant Clinical Professor
Department of Surgery, John A.
Burns School of Medicine,
University of Hawaii

Jennifer R. King, D.O.
Pediatric Sports Medicine
Assistant Clinical Professor
Department of Surgery, John A.
Burns School of Medicine,
University of Hawaii

Common statements parents make:

- My legs were the same and I had to wear braces...
- My husband's legs look like that and I don't like it...
- My child falls over his/her feet all the time...
- Does my child need orthopedic shoes?

Why is my child walking with his/her toes pointed in or out?

Rotational alignment of the lower limbs has wide normal variation in most children. Excessive turning in or turning out are more common in infants and children and rare in adolescents. They often cause concern for parents and sometimes cause minor functional problems in kids. Your concern should be taken seriously – the child must be evaluated carefully and an accurate diagnosis must be established.

What other information is needed?

Some other questions your doctor may ask:

- Does anyone else in the family walk the same way?
- Is there any family history of hip or foot abnormalities?
- Was the pregnancy and delivery normal?
- Has the child been growing normally and eating well?
- Has the child reached milestones for sitting, walking, & talking on time?
- Is there any muscle spasm, weakness, or pain?
- Is there any history – trauma or fracture?

A rotational problem such as femoral torsion can be inherited. Sometimes a rotational problem is a manifestation of an underlying disorder. Your doctor will try to exclude any problems with muscle control (cerebral palsy), limb length difference (dislocated hip, hip dysplasia), angulation of the knee or leg (tibia vara), and injury to the hip growth plate (slipped capital femoral epiphysis).

Why shouldn't I be more concerned about the problem?

Once the pathologic conditions noted above are excluded, the vast majority of rotational problems fall into a category of physiological or postural problems in children. Rarely do these problems persist into adolescence or cause disability. The normal progressive of rotation of the limbs leads to correction of rotational problems gradually with growth of the child. Children commonly toe in when they start to walk at 1 year, are usually walking with their feet straight ahead by the age of 8 years, and walk with them turned slightly outwards by puberty.

There are three pathologic causes of in toeing that your doctor will assess – femoral torsion, tibial torsion, and hooked feet (metatarsus adductus).

What are femoral anteversion, femoral torsion, tibial torsion, and metatarsus adductus?

The hip joint is more flexible in children and has greater rotation. The thighbone itself has a natural twist between the hip joint and the knee called femoral anteversion. Anteversion in children is much greater than in adults causing the entire limb to rotate inward when they walk. When the rotation of the thighbone is very severe, it is called *femoral torsion*.

The leg bone also has a natural twist between the knee and the ankle. This rotation can be estimated by the orientation of the ankle joint with the knee pointing forward. The ankle normally faces slightly outward. If the ankle faces very far outward or inward, it is called *tibial torsion*.

The foot normally has a straight outside border. If the outside edge is curved, it is called a hooked foot or *metatarsus adductus*. The curve is graded mild, moderate, and severe. A severely hooked foot can make the whole limb appear to toe in when the child is walking.

Should we get braces or special shoes?

Most cases of femoral torsion and tibial torsion improve spontaneously without treatment. Shoe modifications and braces do not accelerate the natural process of correction and, in fact, may make the child uncomfortable, self-conscious, and hamper play.

Most hooked feet get better in the baby's first month without treatment. If a severely hooked foot does not improve, then casting may be needed.

When is surgery necessary?

Surgery is rarely necessary for physiologic in toeing or out toeing. The child should be given sufficient time to correct the rotational problem naturally. The final adult position is normally reached 8-10 years of age. Therefore, surgical correction of the severely rotated limb is delayed until after 10 years of age. One may consider surgery for a severe rotational problem that interferes with walking. Cosmetic issues should not drive the decision for surgery in a healthy child.