



ORTHOTICS AND KIDS

A quick method for checking children for orthotics needs

BY BRIAN JENSEN, DC

TIME TO READ: 9-11 MIN.

THE TAKEAWAY

Performing an orthotics exam for children can be crucial for catching early-development issues that cause major problems later in life. Most problems arise when the feet and legs do not align properly or when the main longitudinal arch does not develop fully.

CHILDHOOD FOOT PROBLEMS CAN HAVE BOTH IMMEDIATE AND LONG-TERM EFFECTS. During growth, the normal development of the pelvis and the spine will suffer if there is a foot imbalance. A budding athlete's skill level — even running at recess — can be significantly affected.¹

Later on, foot problems from childhood can interfere with adolescent (or adult) spinal function, which can result in poor biomechanics and accelerated degenerative changes in the knees, hips and spine. With a relatively quick screening of their younger patients, chiropractors can identify those who

need early intervention, and then provide proper custom-made orthotic support.

Early development

Especially as we begin to walk, and during early development, the lower extremity changes significantly. The legs undergo rotation, in order to allow the feet to align with the knees and hips for smooth gait. The arches slowly become more obvious and increase in height as our gait improves.

The foot grows faster than the rest of the body; it achieves three-quarters of its mature length by the time a child is 7 years old.²

Most problems arise when the feet and legs do not align properly (in-toeing or out-toeing), or when the main longitudinal arch does not develop fully.

In- and out-toeing

Shoe modifications such as wedges, special lasts and corrective orthotics have no significant predictable effect on children with in-toeing or out-toeing.^{3,4}

Exercising the involved external (or internal) rotation muscles (to accelerate or stabilize the normal developmental rotation of the leg) may be useful but has not been reliably tested. At this point, the best

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recommendation for most kids is to wear good shoes, and to focus on sports and activities that develop balanced leg muscles.

When there is a family history of poor foot/leg alignment, custom-made orthotics may be of some benefit, primarily in improving biomechanical function and coordination during sports performance.

Flat foot

The longitudinal arch normally develops during the first 6-10 years of growth. The reduced incidence of flatfoot seen in studies of barefoot populations⁵⁻⁸ suggests that muscle strength and mobility are important factors in the normal development of the arches.

This means that a child is more likely to develop a flexible, yet strong arch when going barefoot. Wearing orthopedic shoes or arch inserts does not seem to influence the development of normal arches.⁹

Parents should be encouraged to let children go barefoot whenever it is safe, and to select shoes based on function, not just on style or cost.

Screening exam for orthotics

A very quick method for checking kids for the need for orthotics follows. This lower-extremity screening examination fits well into standard chiropractic examination procedures and can be performed easily on children down to ages 5-6.

When several red flags are present, you will have to discuss the findings and the probable need for orthotics with the parents.

Observe the child's gait — By studying a few normal, relaxed paces, several abnormal gait findings can be distinguished. With young patients, the most common fault is in-toeing, followed

closely by excessive toeing-out (foot flare). This can be identified by looking at the alignment of the foot with the lower leg as your patient walks. An angle that is either less than 5° or greater than

15° is a red flag for excessive rotational torque stresses into the knees, sacroiliac joints and spine.

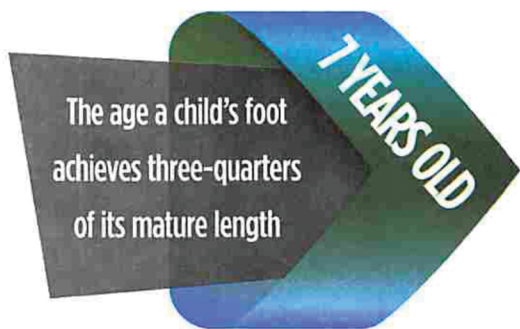
Knee to foot alignment — Look at the lower legs of the child from the

SCREENING EXAM FOR KIDS

- OBSERVE THE CHILD'S GAIT
- CHECK KNEE-TO-FOOT ALIGNMENT
- LOOK AT THE ACHILLES TENDONS
- PALPATE THE MEDIAL ARCHES
- TOE RAISE TEST FOR FLEXIBILITY
- CHECK FOR SUBLUXATIONS
- LOOK AT THE SHOES

- LOOK FOR FOOT FLARE (TOE-OUT), TOE-IN, OR OTHER GAIT ABNORMALITY
- MEDIAL FACING ("SQUINTING") PATELLAE OR VALGUS KNEES
- MEDIAL BOWING IS ASSOCIATED WITH AN EVERTED CALCANEUS
- CHECK FOR LACK OF AN ARCH AND/OR PAINFUL PLANTAR FASCIA
- RULES OUT A RIGID FLAT FOOT, AS IN TARSAL COALITION OR EQUINUS
- ADJUST, THEN CHECK FOR RECURRENCE WITH WALKING
- CHECK FOR EXCESSIVE LATERAL HEEL WEAR OR SHOE BREAKDOWN

front. Mentally drop a straight line down from the mid-point of each kneecap to the foot. This imaginary plumb line should strike the foot over the first two metatarsals. If the knees point out or in when the feet are straight ahead, or if there is a valgus angulation (knock-knees), another red flag is raised.



Is the Achilles tendon straight? — When you see a patient's heel cord bowing inward (medially), you have a red flag that indicates probable instability of the calcaneus. When the heel does not align with the Achilles tendon, the child will develop into an overpronator, and this biomechanical fault will interfere with knee, hip and spinal function over the decades.

Check the medial arches — If you cannot get your finger under the medial longitudinal arch, the child is not developing normal arches. While palpating the arch, take a moment to

push upward into the plantar fascia. Even a brief palpation will tell you if the connective tissue that supports the arch is intact or is under excessive strain. If this is painful to the child, it is possibly the sign of early plantar fasciitis, which is likely to still be at a stage where conservative biomechanical treatment will be rapidly helpful.

Perform a toe raise — If there is a lack of development of the medial arch, ask the child to do a toe raise. By standing up on the toes, the plantar fascia is put under tension, creating a temporary arch in patients with a flexible flat foot. If the foot remains flat (or becomes convex) in this position, it is likely that the child has a rigid flat foot. This is due to an anatomical fixation, such as a tarsal coalition or an equinus foot.

Check for recurring subluxations — Palpate and adjust any parts of the foot that are not functioning normally. Ask the child to walk around the room a few times, and then re-check. If the extremity subluxations that were just adjusted have returned, it demonstrates an underlying biomechanical problem which will need external support.

Look at the shoes — Take a moment to inspect the wear pattern on the child's shoes. Parents may need to be instructed to bring in a worn pair for better analysis. Look to see if there are any excessive or abnormal wear patterns present,

either at the heels or in the upper, softer portions of the shoes. A red flag is any asymmetrical, excessive or lateral wearing down of a heel, or a bulging or tearing of the shoe's upper material.

Orthotics for kids

Children do not usually need custom orthotics until about the age of six years. If at that point a child is still not developing a normal arch, or if in-toeing persists, orthotics may be needed.

This is particularly true when the child is involved in athletics and sports activities. In these cases, custom-made orthotic support for the arches can significantly improve gait and running performance. Otherwise, many children are well-served by wearing sensible, flexible shoes.

When there is a family history of flat feet or in-toeing, a more aggressive use of orthotics is appropriate. Parents will need to be informed of the need to regularly refit the orthotics as the child's foot grows. **CE**

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References can be found online at chiroeco.com

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