

## Do Children Need Corrective Footwear?

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For years, specially designed shoes have been recommended in cases of flat foot (poor development of the longitudinal arch) and in-toeing. Both of these conditions are noticeable when a child first begins to walk. After several years (usually when the child reaches 4 to 6 years of age), parents become concerned and bring the child in for an evaluation. We now understand the natural process of foot development much better and can make specific recommendations in such cases.

### Cultural Attitudes Affect Development

It has been known for decades that the foot has few biomechanical problems in its natural state.

Investigators in various parts of the world<sup>1-4</sup> have identified several specific characteristics found in those who have grown up without wearing shoes:

- absence of foot deformities, including bunions and hammertoes;
- alignment of the phalanges with the metatarsals, producing spreading of the toes; and
- excellent mobility, especially of the forefoot.

In the study groups, all subjects seldom wore shoes, and most foot problems were a consequence of injury or infection. Few problems were found in children, and childhood cases of flatfoot and in-toeing were quite rare. By contrast, in developed societies such as ours, shoes are worn from the earliest stages of childhood, through adolescence and into adulthood. Do shoes help or hinder the normal biomechanical development of the feet?

What to Look for in Children's Shoes	
Flat Shoes	Avoid raised heels to ensure proper weight distribution, promote proper posture, and prevent toe cramping and deformity.
Flexible sole	Stiff soles limit the movement necessary for developing normal foot strength and mobility.
Light and porous upper	Allow the foot to breathe to help prevent foot infections. Also avoid excessive weight from the shoe material.
Nonslip soles	To reduce the potential for falls and injuries, avoid soles that are too slippery or too sticky.
Room for toes	Shoes that are too big are preferable to those that are too small or too short. (Allow one finger breadth between the first toe and shoe.)

Shoe appearance/cost	Final considerations should be whether the shoe is acceptable to the child, and fits into the family budget.
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### Common Foot Problems

Flat feet. The longitudinal arch normally develops during the first six to 10 years of growth. The reduced incidence of flatfoot seen in barefoot populations suggests that muscle strength and mobility may be important factors in the normal development of the arches, and that a child is more likely to develop a flexible, yet strong arch when going barefoot. We need to encourage parents to let their children go barefoot whenever it is safe, and to select shoes based on function, not merely on style or cost. (See Table above.) The tendency to develop flatfoot is inherited, and the source of many kids' flat feet can be traced to a parent or another relative. In these cases, it is especially important for the child to spend considerable time barefoot. When this cannot be done safely or regularly, custom-made, flexible orthotics should be considered.

In-toeing. This condition has been referred to as the most common complaint associated with gait in children.<sup>5,6</sup> Historically, shoe modifications (such as wedges and special lasts) have been prescribed for correcting the lower-extremity rotational problems that cause in-toeing. Studies over the past several decades have shown that such interventions have no significant, predictable effect on kids with in-toeing.<sup>7</sup> Exercising the involved external rotation muscles (to accelerate normal developmental rotation of the leg) may be useful, but has not been tested reliably. At this point, the best recommendation for most children is to wear good shoes, and to focus on sports and activities that develop balanced leg muscles.

### Shoe Recommendations

For the vast majority of children, special shoes are not necessary.<sup>8</sup> Currently, "corrective" shoes are seldom prescribed, and are only considered necessary when a significant gait problem cannot be resolved by wearing good shoes and using the leg muscles in regular activity. The major hallmark of a good shoe is a flexible sole. In fact, the best shoes for children are those that come close to allowing the foot to function as if it were not in a shoe. This means there needs to be sufficient room for the toes (plenty of length) and for the forefoot (plenty of width). An unusually "supportive" or restrictive shoe is not needed, and may hamper the development of normal foot biomechanics.

Of major concern are youth versions of adult sports shoes - their thick, rubberized soles are often extremely inflexible, and may interfere with the normal growth of the arches of the foot. Another common problem is seen in the "dressy" shoes for girls. Elevated heels, pointed toes and small sizes all contribute to future foot problems.

### Orthotics for Children

Children do not usually need custom orthotics until about the age of 6. If a child is still not developing a normal arch at that point, 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 improve gait and running performance significantly; otherwise, many children are well-served by wearing sensible, flexible shoes.

### Caring for Younger Feet

With more research and experience, we know now that there are only a few rare cases of children who need special "orthopedic" or "corrective" shoes. Most kids will develop healthy foot and arch alignment, as long as they are not forced into poorly fitted, inflexible shoes. In fact, children should

be encouraged to spend as much time as possible barefoot. The main consideration when going without shoes is protection from cold, heat and injury. When shoes are required, the simple guidelines noted in the table above are sufficient to help parents select shoes that will not interfere with the normal development of their children's feet.

In conclusion, orthotics may be helpful for children who demonstrate persisting biomechanical problems by the age of 6. Those who are active in sports or who demonstrate inefficient or awkward gait patterns are good candidates for custom-made, corrective orthotics designed to support the developing arches of the feet.

### *References*

1. Hoffman P. Conclusions drawn from a comparative study of the feet of barefooted and shoe-wearing peoples. *Am J Orthop Surg* 1905;3:105-136.
2. Engle ET, Morton DJ. Notes on foot disorders among natives of the Belgian Congo. *J Bone Joint Surg* 1931;13:311-318.
3. James CS. Footprints and feet of natives of the Solomon Islands. *Lancet* 1939;2:1390-1393.
4. Sim-Fook L, Hodgson A. A comparison of foot forms among the nonshoe and shoe-wearing Chinese population. *J Bone Joint Surg* 1958;40A:1058-1062.
5. Mital M. Children's feet: common worries of parents. *Prof Care Mother Child* 2000;10(2):33-34.
6. Kamegaya M, Shinohara Y. Gait disorders and leg deformities in children. *J Orthop Sci* 2002;7(1):154-159.
7. Knittle G, Staheli LT. The effectiveness of shoe modifications for intoeing. *Orthop Clin North Am* 1976;7:1019-1025.
8. Staheli LT. Corrective shoes for children: are they really necessary? *J Musculoskel Med* 1996;13:11-15.

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JUNE 2003