



Flat foot – Pes planovalgus

What is a flat foot?

Children with flat feet have a flat or collapsed inner arch of the foot. These feet look like the ankles are bending in toward the inside and there appears to be increased loading on the inside of the foot.

The most common type of a flat foot is flexible foot with a flattened arch and a heel that curves outward under load. From this flexible type we distinguish a rigid flat foot, which is much less flexible or stiff. It cannot be easily brought into a normal position.

How frequent are flat feet?

In the first years of life, flat feet occur in a large number of children. The frequency decreases significantly during childhood, so that at the end of growth about 5% of adults will still have flat feet.

How can flat feet be recognized?

Flat feet typically diagnosed through the clinical examination. The doctor looks at the shape of the foot and examines joint mobility. The most important test is to check the behaviour of the foot in the heel rise position. The longitudinal arch of the foot should straighten and the heels should tilt towards the inside when the child actively goes into the heel-rise position (see illustration of the right foot in the figure below).

The crucial question in the further assessment of the situation is whether the child reports discomfort in the foot or whether there is evidence of restricted movement. In these cases, we speak of a symptomatic flat foot. Careful examination of the shape and mobility of the foot and ankle is always important, for example, to detect concomitant shortening of the Achilles tendon or the special type of a prominent tarsal bone (accessory tarsal navicular or *Os naviculare cornutum*). In the case of rigid flat foot, on the other hand, one notices that the feet are stiff and the longitudinal arch is not fully straightened either in sitting or on heel-rise. This can be an indicator of limited mobility in the lower ankle joint. When stand on tip toes the heel shows no change in position (see Figure 1 left foot) . Such a finding is non-physiological and often associated with pain or more serious pathology. The cause may be, for example, a so called tarsal coalition. This is an atypical bony or fibrous connection between two bones of the hindfoot. This type is rare and surgery is often required. Persistent night pain or pain with fever requires further investigation without delay.



Figure1: In flexible flat foot (right foot), the arch of the foot straightens when the child stands on tip toes. The heel tilts inward from the outside position. If the foot remains rigid, this may indicate a pathology (left foot).

Does my child's foot need treatment? If so, what is the treatment?

The decision of whether a foot should be treated or just needs observation depends on the symptoms and clinical findings.

While the majority of flat feet are not problematic in early childhood, rigid flat feet usually require early treatment. The rigid flat foot is usually noticed during the pediatric examination in early infancy, the flexible flat foot a little later at the beginning of walking or even later during childhood.

In most cases, flat feet in children do not cause symptoms. Asymptomatic flexible flat feet therefore do not usually require treatment. However, children who show symptoms of discomfort in the feet (e.g., pain, early fatigue, restricted movement or function, unclear swelling) are in need of further investigation and treatment.

Conservative treatment options include self-exercise, physical therapy, modification of footwear, orthotics, or orthotic fitting. There is insufficient scientific evidence that both supportive and sensorimotor insoles have a positive effect on foot shape. Therefore, prophylactic treatment of asymptomatic flat feet is not justified, especially in young children.

In very few cases surgery is necessary. As a rule, non-surgical therapy should be exhausted before deciding on surgery. The indication is given in case of clear symptoms and certain radiological signs.

Presentation to the doctor should be made:

- if your child is in pain
- if the function is restricted
- if there are asymmetrical abnormalities or unusual foot shapes.