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Over-Pronation: When Is It Abnormal?

Over-pronation means flattening of the arches and inward tilting of the ankles when your child is standing (when your child's feet are viewed from behind)

Pronated foot structure is often inherited. Before children reach the age of 3 or 4, it is normal for their feet to appear flat because of a normal fat pad under the arch. After age 4, the fat pad should decrease and inward tilting of the foot and ankle becomes more evident.

When over-pronation is excessive, it can lead to pain in the feet, ankle, achilles tendons (heel cords), back and most commonly, the knee.



Appearance of Excessive Pronation

- When standing, your child's heels lean inward when viewed from behind.
- When standing, one or both of your child's kneecaps turn inward.
- Feet appear flat.
- Knee pain occurring after sports or increased activity. Knee pain may be worse when climbing stairs. The knee pain slowly goes away with rest.
- The soles and heels of shoes wear out quickly.
- Bunions are present. These appear as a bony swelling on the inside of the foot at the base of the big toe (see picture at end of handout).

Common Symptoms of Over-Pronation

Symptoms can manifest in many different ways. Here is a list of some of the common conditions associated with over-pronation in children:

- Achilles Pain (back of the ankle)
- Ankle pain
- Arch Pain
- Low back pain
- Heel Pain
- Knee Pain (Runner's knee and Chondromalecia of the patella)
- Osgood Schlatter Disease (pain below the knee)
- Shin Splints (pain in the front of the lower leg)



Over-pronation does not necessarily mean your child has "flat feet." Even though children's arches may be relatively high when they lie down or sit, over-pronation may not be seen until your child is standing.

A certain amount of pronation is normal. During normal walking or running ("gait cycle"), the heel strikes the ground and the foot rolls inward to absorb shock and adapt to the surface. This gait cycle is even more important if the running surface is uneven.

Over-pronation refers to pronation occurring at the wrong time in the gait cycle. Just before the foot pushes off, it should become a rigid lever as the arch rises and the ankle straightens. If instead, the arch remains flattened and the ankle remains turned inward, muscles and

tendons will be stressed and the foot will undergo excessive wear and tear.

This can cause the foot bones to shift position, which results in additional stress of the bones and joints above the pronated foot. Over time, it is this stress that causes pain in the knees, ankles, feet and back.

Over Pronated Feet

Extreme Pronation of feet- notice Achilles tendon is angled outwards and inside of ankle is leaning towards the floor.



Arch Supports (Over the Counter)

Arch supports may reduce over-pronation and provide enough support to be helpful for most children. Arch supports fit inside of your child's shoes and sneakers (full length) and provide more support to the arch (See pictures below for examples). Arch supports are available in pharmacies, sporting goods stores or can be ordered online.

Custom Made Orthotics

Orthotics (custom-made) are the most successful treatment for over-pronation. Made from high-impact plastics, orthotics fit comfortably in your child's shoes and sneakers. The use of orthotics eliminates the painful symptoms of over-pronation.

Plaster casts: Orthotics can also be molded from plaster casts of the feet in their corrected position. The casts are used in a laboratory to fabricate orthoses that precisely control the mechanics of your child's gait cycle.

Computer analysis: Some newer orthotics are made after a computer assessment of gait and foot function. With this method, your child walks on a pad, and a digitized readout of the foot pressure is displayed on a monitor. The computer is not actually used to make the device, but only to capture the impression of the foot.



Who Makes Orthotics?

Custom orthotics are made by podiatrists (specialized foot doctors). Orthotics will last approximately 3

years.

Is It Important To Lace Shoes and Sneakers Tight?

Soft-soled, lace-up walking shoes or good running shoes made for pronated feet may help relieve symptoms of over-pronation. Lacing shoes and sneakers tight will provide more ankle support and decrease pain.

When Should Arch Supports And Orthotics Be Worn?

Ideally, orthotics should be worn all day to provide the greatest relief of pain. Orthotics can be switched between everyday shoes and sports sneakers.



A flat medial arch

Flat Feet- How Do I Tell?

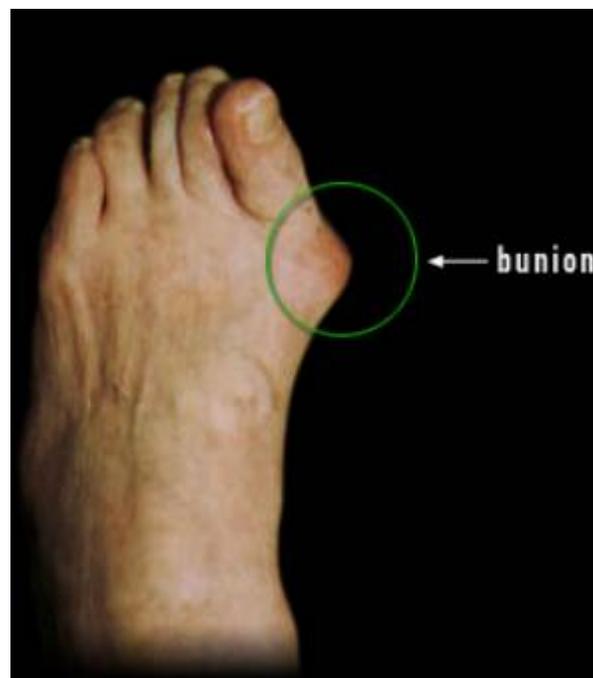
Babies have excessive fat in the arch area, so it appears as if they have flat feet. As they begin to walk, this extra fat disappears and their normal arch becomes more apparent. Many children up to the age of 4 appear to have flat feet when they actually have normal arches. The correct medical term is a Plano-valgus foot. "Plano" refers to the flattened arch, "Valgus" to the heel position away from the midline of the body.

What is a flat foot?

The most obvious deformity with a flat foot occurs on the inner side of the foot and arch. However if the arch on the inner side flattens this may result in the following:

- Heel cord (Achilles tendon) is directed outwards - called a valgus position (see picture above)
- Front part of the foot is turned outwards from the mid-foot (see picture below)
- The Achilles tendon may also become tight as a result of the heel position
- The forefoot may need to rotate inwards to balance the heel position

A bunion is an enlargement of bone or tissue around the joint at the base of the big toe. The big toe may turn in toward the second toe, and the tissues surrounding the joint may become swollen and tender. Bunions take years to develop. A major cause of bunions is excessive pressure on the foot from over-pronation and the resulting development of flat feet.



This information should not be used as substitute for the medical care and advice of your child's physician. Health related topics found on the Andorra Pediatrics web site should not be used for diagnosing purposes or be substituted for medical advice. As with any new or ongoing treatment, always consult your professional healthcare provider before making any changes in treatment or beginning any new treatment. If you have any questions or concerns, please call our office.