



Navicular Stress Fracture

The navicular is one of the bones in the midfoot. A stress fracture is an overuse injury that results when too much stress is placed on a bone. Repetitive stress will initially cause swelling in the bone. If the stress continues, it will eventually cause the bone's cortex (outside layer) to weaken and crack. A navicular stress fracture usually gets better if properly treated, but if ignored, it may lead to chronic foot pain.

Causes

The navicular bone is especially prone to stress fractures for two reasons:

1. It is exposed to a large amount of mechanical pressure during weight-bearing activities, especially running and jumping.
2. It has a relatively poor blood supply compared to other bones, so has limited ability to heal after being stressed.

Navicular stress fractures are most commonly seen in athletes who participate in running and jumping sports (soccer, cross-country, track and field and gymnastics). While navicular stress fractures are primarily due to overuse, sometimes there are additional contributing factors such as improper shoe wear, improper running or landing technique, or a change in running surface. Finally, some foot types are more prone to navicular fractures than others.

Signs & Symptoms

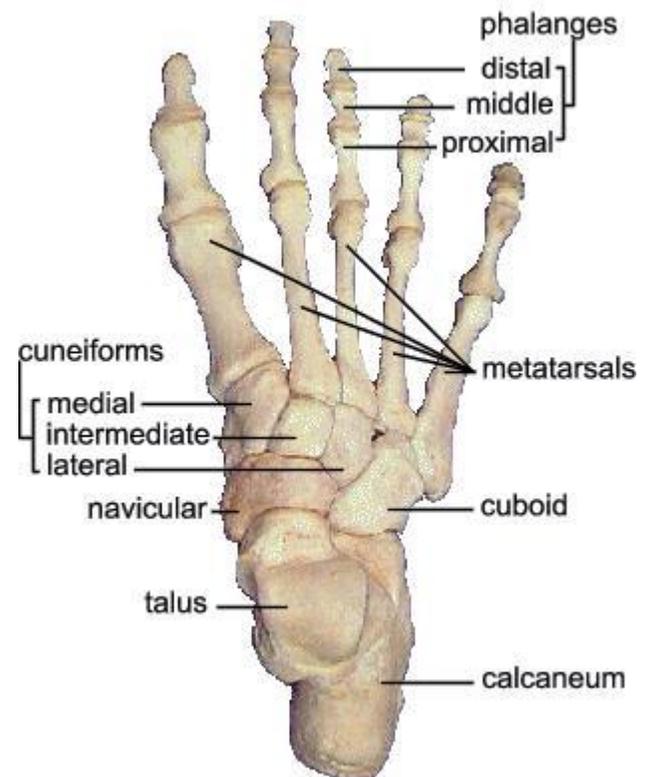
Your child will have vague, aching pain along the inner side of the foot near the arch. It may come on slowly over time and get worse during and following physical activity. Sprinting, jumping and pushing-off are movements that aggravate the pain. It often occurs after a change in intensity or duration of physical activity, or a change in shoe wear or running technique.

Diagnosis

Your doctor will examine your child's foot and ankle. The navicular bone may be tender to touch and there may be pain with hopping and standing on the toes. Sometimes x-rays show the fracture, but not always. If suspicion is high, your doctor may consider an MRI, a CT scan or a bone scan.

Treatment

Treatment should begin with a cast and crutches. Your child should not bear weight on their foot for at least 6 weeks. Your child's doctor will re-examine the foot at this time and if the pain is better, your child may start bearing weight. If the pain is still present, your child may be allowed to bear weight in a walking cast or boot until the pain resolves. Once





your child is bearing weight comfortably, their doctor will prescribe physical therapy to help your child regain strength. Most patients are able to return to sports in 3 months, but some may require up to 8 months to return to full activity.

The specialists in Lurie Children's Institute for Sports Medicine treat children with navicular stress fractures. [Learn more.](#)

Returning to Sports & Activities

The goal is to return your child to their sport as quickly and safely as possible. If your child returns to play too early, or plays with pain, they are at risk for chronic foot injury.

After a period of casting and once pain has completely resolved, rehabilitation proceeds as follows:

Weeks 1 to 2	Normal activities of daily living. Swimming and water running are permitted.
Weeks 3 to 4	If there is no increase in pain or tenderness over the navicular bone during weeks 1 to 2, jogging on grass for five minutes on alternate days is permitted. After one week, increase to 10 minutes on alternate days.
Weeks 5 to 6	If there is no increase in pain or tenderness over the navicular bone during weeks 3 to 4, running to 50% of maximum speed with walk recovery on alternate days is permitted. This speed can be increased to 75% over another two weeks.
After 6 weeks	If there is no increase in pain or tenderness over the navicular bone during weeks 5 to 6, your child can gradually return to full training activity as tolerated.

Information is from Khan KM, Brukner PD, Kearney C, Fuller PJ, Bradshaw CJ, Kiss ZS. Tarsal navicular stress fracture in athletes. Sports Med 1994;; 17: 65-76.