# **Pes Plano Valgus (flatfoot)**

The term flatfoot is not a medical term, but is often used to describe a foot with a flattened or lowered arch.  The arches of normal feet can be of varying height, so it is possible to have a relatively normal foot with a low arch.  A normal foot with a low arch rarely requires treatment.

Pes plano valgus is the medical term that refers to an abnormal foot due to a flattened arch, a rolled-in appearance of the ankle, and a heel that appears to be rolled-out from under the ankle.  Pes plano valgus feet may require treatment – more on this later.

When sitting, a person with pes plano valgus may have a reasonably well-formed arch.  However, when the person stands, the arch flattens, the ankle rolls in, and the heel rolls out (everts).  This complex set of position changes between sitting and standing is called pronation of the foot.  A pes plano valgus foot is often maximally pronated.

Pes plano valgus is usually flexible, meaning that the joints of the foot and ankle are mobile.  A relatively uncommon form of pes plano valgus can be caused by a tarsal coalition, and is not very flexible or mobile (please see the Kaiser Permanente Santa Rosa Department of Foot and Ankle Surgery’s document about tarsal coalitions for more information).

Usually, parents don’t become aware of their child’s pes plano valgus until they start walking, or even later.  Keep in mind that most children don’t fully form an arch until age 3-5.  On the other hand, there are two uncommon conditions that are congenital (present at birth) and usually identified at birth – vertical talus (not flexible), and calcaneovalgus (flexible).  Since these latter conditions are identified at birth and treated differently than the more common pes plano valgus, they will not be discussed here.

While there are some rare causes of pes plano valgus in children and adolescents, and still other common causes in adults, the cause of pes plano valgus in the majority of children and adolescents is hereditary factors, such as bone and joint alignment, ligament laxity (hyperflexible joints), or a tight calf muscle.  While being overweight does not necessarily cause pes plano valgus, it can contribute to these feet being symptomatic (painful).

Pes plano valgus is not always symptomatic (painful).  However, pes plano valgus is often associated with some symptoms.  In younger children, related complaints may be tired feet or legs, wanting to be held after being on their feet for a short duration, or reluctance to play or be active on their feet.  In older children and adolescents, there may be complaints of sports-related knee, shin, heel, ankle, or arch pains.  It is possible for patients with pes plano valgus to develop bunions (hallux abductovalgus) or hammertoes prematurely (please see the Kaiser Permanente Santa Rosa Department of Foot and Ankle Surgery’s documents about [bunions (hallux abductovalgus)](https://thrive.kaiserpermanente.org/care-near-you/northern-california/santarosa/departments/foot-ankle-surgery/foot-and-ankle-surgery/bunions-hallux-abductovalgus/) and [hammertoes](https://thrive.kaiserpermanente.org/care-near-you/northern-california/santarosa/departments/foot-ankle-surgery/foot-and-ankle-surgery/hammertoes/) for more information).

The Department of Foot and Ankle Surgery at Kaiser Permanente Santa Rosa will often recommend initiation of non-surgical treatment measures in a child that

a) has symptomatic (painful) pes plano valgus

b) in cases where symptoms may be minor or absent, but the foot alignment abnormality is significant.  Surgery is not commonly recommended and often reserved for children over age 5 or adolescents that have continuing symptoms (pains), despite a non-surgical care program.

It should be kept in mind that the goals of non-surgical treatment of pes plano valgus are a) the elimination and/or prevention of symptoms, and b) improving activity level (functional capacity).  Non-surgical measures, even custom foot orthoses (custom arch supports), should not be expected to create a permanent structural correction of the foot.

## Primary Non-Surgical Treatment Options:

* Appropriate footwear:  the shoes must be supportive.  Choose shoes that have a sturdy heel counter.  High top shoes and boots provide even more support than standard footwear.  Avoid sandals and barefoot.  Replace shoes that show signs of break-down in the sole or heel.
* Orthoses: replace the insoles that come with shoes with an orthotic insert that provides superior arch support.  Because of rapid growth and the associated expense of custom foot orthoses, pre-fabricated orthoses are recommended as the first-line approach in children.  Custom orthoses are recommended when a) satisfactory response is not obtained with pre-fabricated orthoses, or b) when the feet approach skeletal maturity (around 14-16 years old).  Keep in mind that foot orthoses should not be expected to create a permanent structural correction of the feet, but instead eliminate or prevent symptoms and improve activity level.  Options include:
	+ Kidithotics.  These are excellent prefabricated plastic orthotics designed for children with shoe sizes less than 2.
	+ Superfeet.  These are also excellent prefabricated orthoses – designed for children and adolescents with shoe sizes 2 and greater.
	+ Custom-made foot orthoses.  Custom foot orthoses are not a covered benefit of the Kaiser Permanente Health Plan.   However, custom foot orthoses are available through the Department of Foot and Ankle Surgery on a fee for service basis.  Custom foot orthoses may be prescribed when symptoms are not eliminated with pre-fabricated orthoses or in older children and adolescents with significant foot alignment abnormality.  The current fee is $275.
* Perform calf stretching exercises for 30-60 seconds on each leg at least two times per day.  In many cases, tight calf muscle may be present and part of the cause.   The technique: Stand an arm’s length away from the wall, facing the wall. Lean into the wall, stepping forward with one leg, leaving the other leg planted back. The leg remaining back is the one being stretched. The leg being stretched should have the knee straight (locked) and the toes pointed straight at the wall. Stretch forward until tightness is felt in the calf. Hold this position without bouncing for a count of 30-60 seconds. Repeat the stretch for the opposite leg.
* Weight loss, if overweight.  Reducing weight can reduce the stress on the feet and reduce symptoms.

## Non-Surgical Treatment Options During Symptomatic (painful) Periods:

* Modify activities.  Decrease the time spent in activities that put added stress on the feet (PE, sports, play).  Convert impact exercise to non-impact exercise – stationary cycling, swimming, and pool running are acceptable alternatives.
* Use ice on the painful area for 15-20 minutes, at least 2-3 times per day.  Option A – Fill a styrofoam or paper cup with water and freeze it. Peel back the leading edge of the cup before application. Massage the affected area for 15-20 minutes.  Option B –Apply an ice pack for 15-20 minutes.  CAUTION: AVOID USING ICE WITH CIRCULATION OR SENSATION PROBLEMS.
* Use an oral anti-inflammatory medication.  We recommend over-the-counter ibuprofen.  Take \_\_\_ 200mg tablet(s) (or liquid equivalent), two times per day with food.  To obtain the proper anti-inflammatory effect, you must maintain this dosing pattern for at least 10 days.  Discontinue the medication if any side effects are noted, including, but not limited to: stomach upset, rash, swelling, or change in stool color.  IF YOU TAKE ANY OF THE FOLLOWING MEDICATIONS, DO NOT TAKE IBUPROFEN: OTHER PRESCRIPTION OR OVER-THE-COUNTER ORAL ANTI-INFLAMMATORY MEDIACTIONS.  IF YOU HAVE ANY OF THE FOLLOWING HEALTH CONDITIONS, DO NOT TAKE IBUPROFEN: KIDNEY DISEASE OR IMPAIRMENT, STOMACH OR DUODENAL ULCER, DIABETES MELLITUS, BLEEDING DISORDER.

## Surgical Treatment Options:

* Surgery for pes plano valgus in children and adolescents is usually reserved for patients that are failing to obtain relief of symptoms, despite following a non-surgical treatment program.  These patients usually have significant abnormalities of foot alignment.  Other factors, such as the severity of family history of the problem, or severity of causative factors such as a tight calf muscle may also play a role in deciding when surgery should be considered.  Surgery is rarely recommended for children under age 5, because it may take that long in some cases for an arch to develop.
* There are a variety of different surgical procedures that may be utilized when surgically correcting a pes plano valgus foot.  Procedures range from calf muscle lengthening to implant placement to tendon tightening to bone cutting and repositioning to joint repositioning and fusion.  The exact combination of procedures that would be selected will be mainly influenced by the patient’s age and the source of the patient’s alignment abnormalities.
* Surgeries of this nature typically require general anesthesia.  An overnight hospital stay may be in order for some patients.  Recoveries generally take 4-12 months.  The risks of pes plano valgus surgery include, but are not limited to: infection, nerve injury or entrapment, prolonged healing/recovery, wound or scar problems, incomplete relief of pain, no relief of pain, worsened pain, recurrent pain, calf atrophy, weakness, limping, incomplete arch restoration, failure of bone cuts or fusions to heal, intolerance of implants, stiffness, and transfer of pain to other sites or joints.  Patients that have surgery for pes plano valgus may still occasionally need foot orthoses to support their surgically corrected alignment.