

# Femoral Anteversion

## INTRODUCTION

Your child has been diagnosed with femoral anteversion. This is one of the common causes for intoeing, typically seen in a school aged child. Femoral anteversion means that there is a twist in the femur (thigh bone) between the knee and the ankle. This twist is typically present at birth, but is often not recognized until the child has developed a mature gait. It is very uncommon for there to be pain or functional limitations. Almost always, femoral anteversion improves with growth. Splints, braces, special shoes, and exercise programs don't help. If femoral anteversion is severe and persists past age 8, surgery can be considered.



## BACKGROUND

Intoeing is a term used to describe an internally rotated foot position with gait. Gait is a complex process which takes years to mature. Gait develops and matures as balance, coordination, and strength improve. Toddlers often start walking with knees bent and hips rotated outward, taking short wide steps. With practice and growth, strides lengthen and knees are kept straighter and directed more forward. As this occurs, kids may start looking intoed. Intoeing is not a function of gait so much as it related the shape of the legs. Intoeing is measured by looking at the angle between the axis of each foot and the direction of walking. There is a wide range of normal for foot alignment when walking. Most people are in the range from 10 degrees inward to 30 degrees outward, with the most common alignment being about 5 degrees outward.

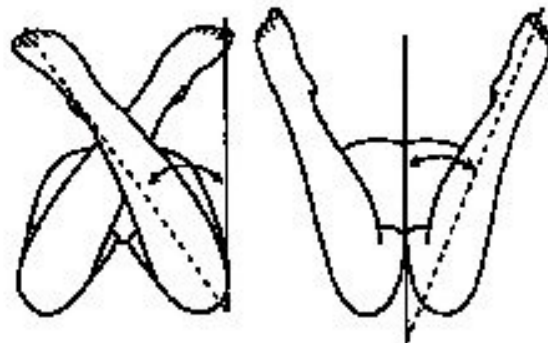
The twist in the femur is related to bone development prior to being born. Prior to birth, the legs were held in a confined position. Pressure from the uterine wall can cause the bones to develop with a twist. The twist is often not noticed until the children start to stand and walk. There are 3 levels where a curvature or a rotation can be found in the legs. A curvature in the foot is called metatarsus adductus. A twist in the lower leg is called tibial torsion and a twist in the thigh bone is called femoral anteversion.



## DIAGNOSIS

The diagnosis of femoral anteversion is made by examining the child and by observing gait. Femoral anteversion is best seen with the child laying flat and the knees bent upward. The rotation of the tibia is measured by looking at the amount of rotation at the hip. Most people rotate internally and externally about 45 degrees at the hip, which correlates to the average femoral anteversion of about 15 degrees. If a child has

more internal rotation and less external rotation, the difference can be measured and compared to the expected range in order to provide an estimate of your child's femoral anteversion. This is the most common cause of intoeing found in school aged children and is usually recognized as the child gets more active with running and sports.



## TREATMENT

Almost always, femoral anteversion will correct spontaneously with growth. Femoral anteversion rarely results in any significant functional problems and does not need to be treated.

Many years ago, femoral anteversion was routinely treated with uncomfortable shoes, braces, or twister cables. It turns out that these "treatments" do not change the natural growth pattern. Since femoral anteversion corrects spontaneously, these braces appear to be effective. Many parents in that generation were told to brace their children. They saw the improvement with time and believe in the effectiveness of bracing. Professor Lynn Staheli of the University of Washington has studied these problems extensively for many years. To quote him... "Shoe modifications are useless; bracing is ineffective. Surgical rotational osteotomies are effective, but risky, and indicated only for severe, persisting deformities."

## EXPECTATIONS AND OUTCOMES

Intoeing does not cause your child pain. Intoeing usually does not interfere with the way your child walks, runs, jumps, or plays. Intoeing has not been linked to degenerative arthritis or any other medical conditions in adulthood.

## MORE INFORMATION

Further information can be obtained on the internet. Your local public library can help you explore these sources if you are interested. Two good sites for peer reviewed information are the American Academy of Orthopedic Surgeons at [www.aaos.org](http://www.aaos.org) and [www.emedicine.com](http://www.emedicine.com).

## FEEDBACK

If you have questions or comments, please contact the office or submit them to the web site at [www.pedortho.com](http://www.pedortho.com).