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Foot and Ankle Surgeon, Podiatrist

- Diplomate: American Board of Foot and Ankle Surgery
- Fellow: American College of Foot and Ankle Surgeons
- Board Certified Foot and Ankle Surgeon
- Board Certified: American Board of Foot and Ankle Surgery
- Specializing in Sports Medicine, Lower Extremity Trauma
- Specializing in Deformities in Children and Adults
- Specializing in Complex Ankle Ligament Injuries



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- Board Certified: American Board of Podiatric Medicine
- Specializing in Lower Extremity Injuries and Deformities in Children and Adults
- Specializing in Complex Limb Salvage; Foot, Ankle and Leg Fracture Surgery
- Specializing in Total Ankle Replacements and Running Injuries



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- Board Certified Foot and Ankle Surgeon
- Specializing in Sports Medicine, Foot and Ankle Arthroscopy
- Specializing in Lower Extremity Injuries and Deformities in Children and Adults
- Specializing in Adult and Pediatric Reconstructive Foot, Ankle and Leg Surgery
- Specializing in Adult and Pediatric Lower Extremity Trauma



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- Specializing in Foot and Ankle Arthroscopy
- Specializing in Total Ankle Replacement
- Specializing in Lower Extremity Injuries and Deformities in Children and Adults

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### PLANTATION

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# TIBIAL TORSION

## CAUSES OF INTOE & OUTTOE

**Toe In**

**Toe Out**



Messina • Goodner • Cohen • Windram  
Desimone • Moya • Bertot • Shenassa • Jones • Gonzalez

# Foot, Ankle & Leg Specialists of South Florida

# TIBIAL TORSION

By: Robert H. Sheinberg, D.P.M., D.A.B.P.S., F.A.C.F.A.S.

## WHAT IS IT?

It is a rotation of the lower leg bone (tibia) excessively outward or inward relative to the upper leg bone (femur). It may also be due to an external or internal twist of the lower portion of the lower leg bone (tibia) relative to the upper portion of the lower leg bone (tibia). Usually noticed between the ages of 2 and 4. It is the most common cause of in-toe in the 2 to 4-year-old age group and the condition usually resolves by age 8. External tibia torsion is often associated with flat feet, and it may not resolve.

## CAUSES:

- In utero position.
- Excessive outer or inner ligamentous and muscular tightness around the knee region.
- Sitting and sleeping postures may perpetuate the problems but generally do not cause them. It will prevent it's resolution.

## SIGNS & SYMPTOMS:

- When viewing the child standing, the foot and lower leg appear to be rotated outward or internally. The knee cap appears to be straight, thus distinguishing this condition from femur and hip conditions.
- When walking or running, the feet excessively turn out or in, occasionally causing tripping and falling. During running the kneecaps continue to stay straight.
- At the end of the day when fatigue sets in, the in-toe appears to be worse. It may be asymmetrical (one side worse than the other). Out toe children will typically fatigue prematurely.
- The child can appear to be bowlegged (because the musculature in the calf is rotated towards the outside of the lower leg). This occurs with internal torsion.
- Could be associated with metatarsus adductus in an infant. The foot looks crooked when a child walks inward or it may be associated with flatfooted children.

## CLINICAL EXAMINATION:

Examining the child with the patient sitting, standing and walking is important. When the child is sitting the rotation of the lower leg bone is measured against the upper leg bone. When the rotation of the lower leg bone is excessively INTERNAL with very little rotation EXTERNALLY, this is indicative of internal tibial torsion. When excessively rotated outward, it's indicative of external tibial torsion.

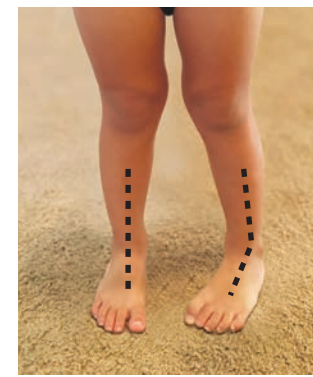
**GAIT** - Observation of the kneecaps is important in helping to rule out other hip or femur problems.

## TREATMENT:

- Observation of gait and reassurance to the parents that internal torsion usually resolves by age 8 is provided. External torsion may not.
- Abnormal sitting and sleeping postures which tend to perpetuate the deformity need to be changed.
- A child that is tripping and falling or has a posture that is excessively turning in or out will benefit from a cast that goes above the knee. During the cast application the lower leg bone is gently rotated internally or externally relative to the upper leg bone. This helps to stretch the ligamentous and musculotendinous structures around the knee. It is done gently to avoid stressing the growth plates in the knee. A cast may be utilized for 2-6 weeks. This will rapidly help the normal physiologic unwinding process of the lower leg bone relative to the upper leg bone take place. Night splinting is utilized following cast removal to maintain the correction.
- Orthotics will help to lessen people's out toe gait.
- Counter rotational splints and a Denis Browne bar may also be helpful in infants and toddlers. They help in the unwinding process as much as they will help prevent abnormal sleeping postures that could perpetuate the deformity.

## PROGNOSIS:

Usually good if evaluated and treated early.



Internal Tibial Torsion



External Tibial Torsion



Internal Tibial Torsion Exam



External Tibial Torsion Exam

## Rotational Deformities



Normal

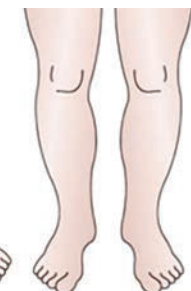
## Internal tibial torsion



## External tibial torsion



Genu valgum  
(Knock Knees)



Normal



Genu varum  
(Bow Legged)