

LOWER EXTREMITY ROTATIONAL DEFORMITIES

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LE Rotational Deformities

- Common problems
- Wide range of diagnoses
 - Most are “normal”



Chief Complaint

- What is the concern?
- Why is it a concern?
 - Functional
 - Cosmetic
 - Future problems



History

- Onset
- Milestones
- **Functional problems?**
- **Pain?**



CONSIDER other Diagnoses

Examination

- Observational gait analysis
- Rotational profile
- Angular deformities

ROTATIONAL PROFILE

Foot-progression angle
Hip rotation
Thigh-foot axis
Foot deformity

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Lower-Extremity Rotational Problems in Children

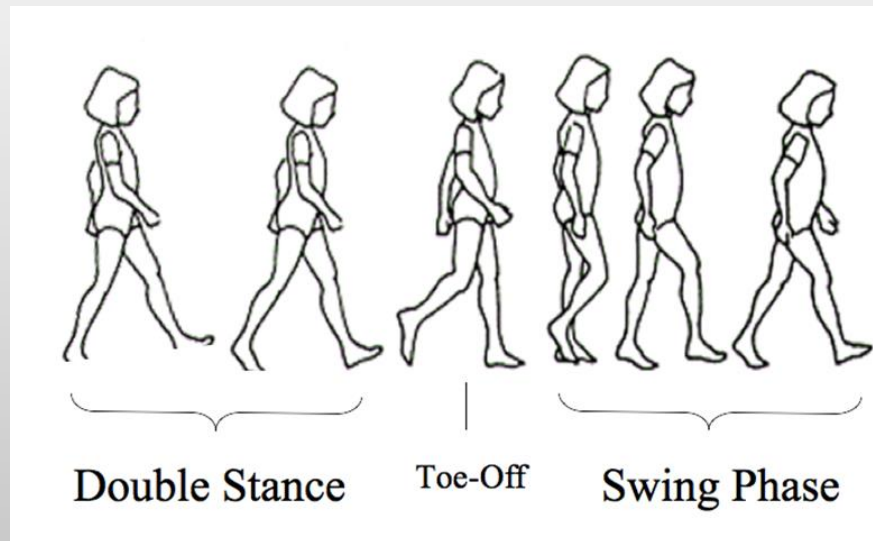
NORMAL VALUES TO GUIDE MANAGEMENT

BY LYNN T. STAHeli, M.D.* , MARILYN CORBETT, B.S.† , CRAIG WYSS, PH.D.† , AND
HOWARD KING, M.D.† , SEATTLE, WASHINGTON

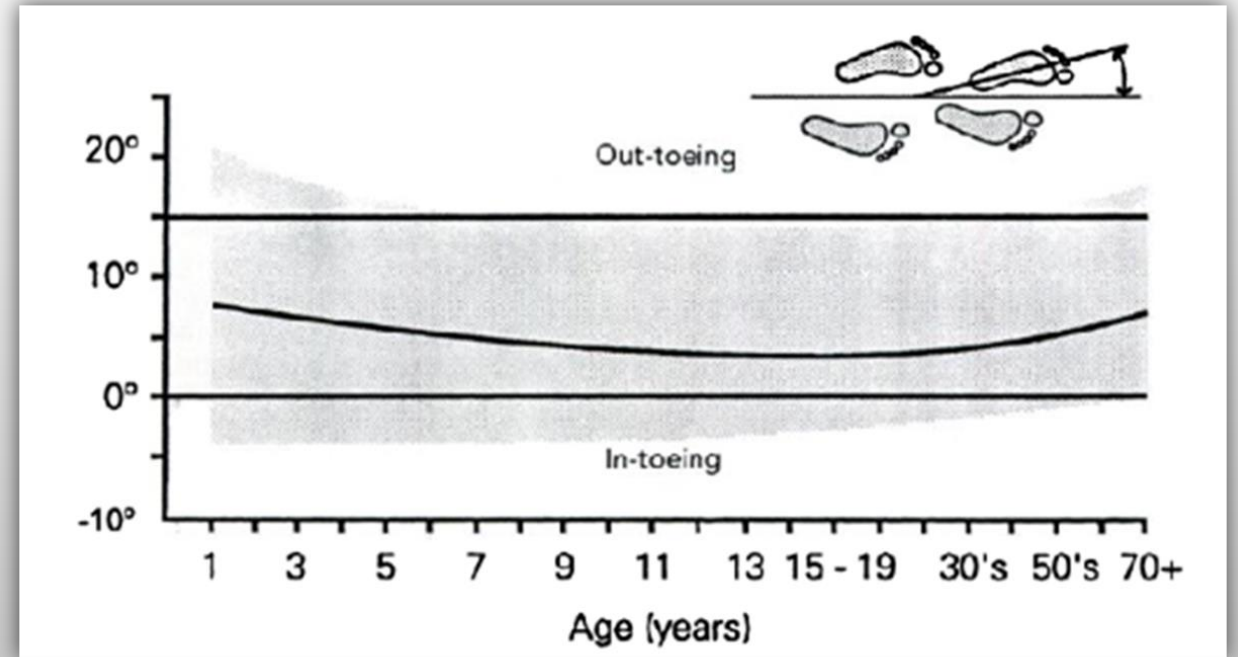
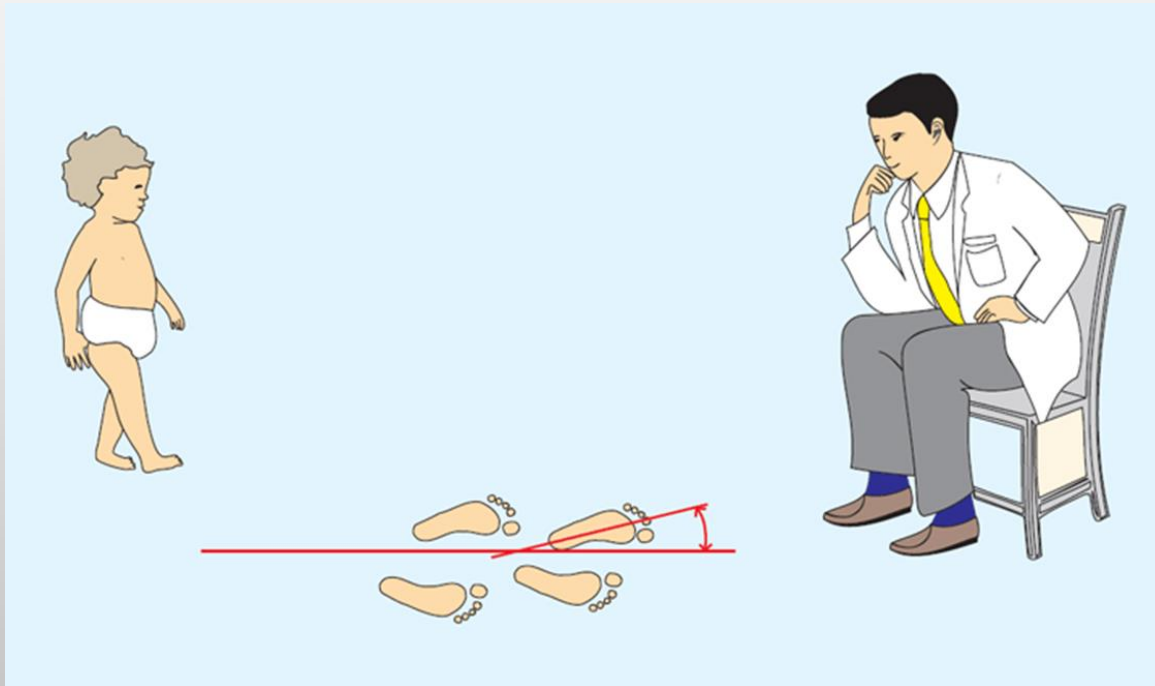
From the Department of Orthopedics, Children's Orthopedic Hospital and Medical Center, Seattle

Gait Analysis

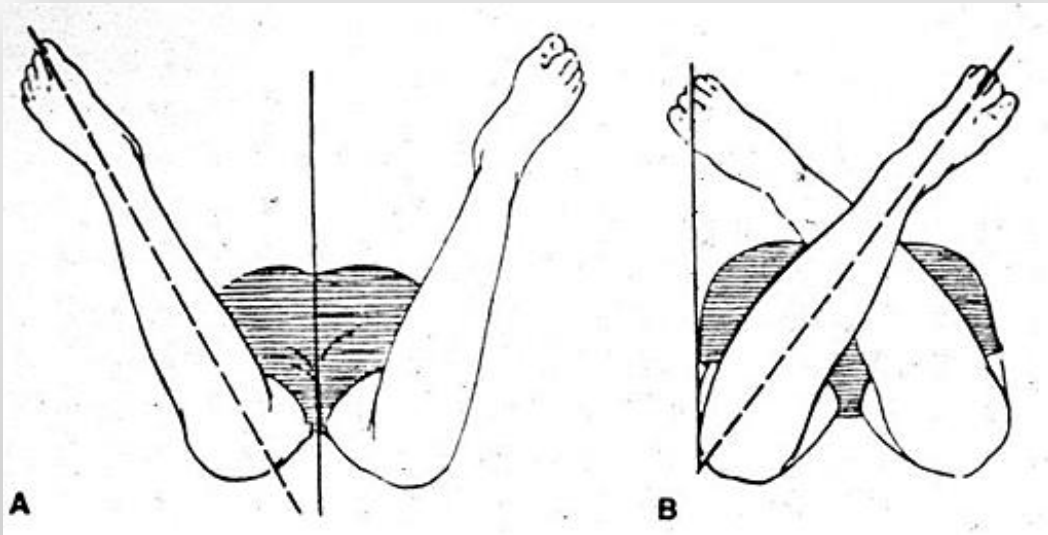
- **Observe walking and moving**



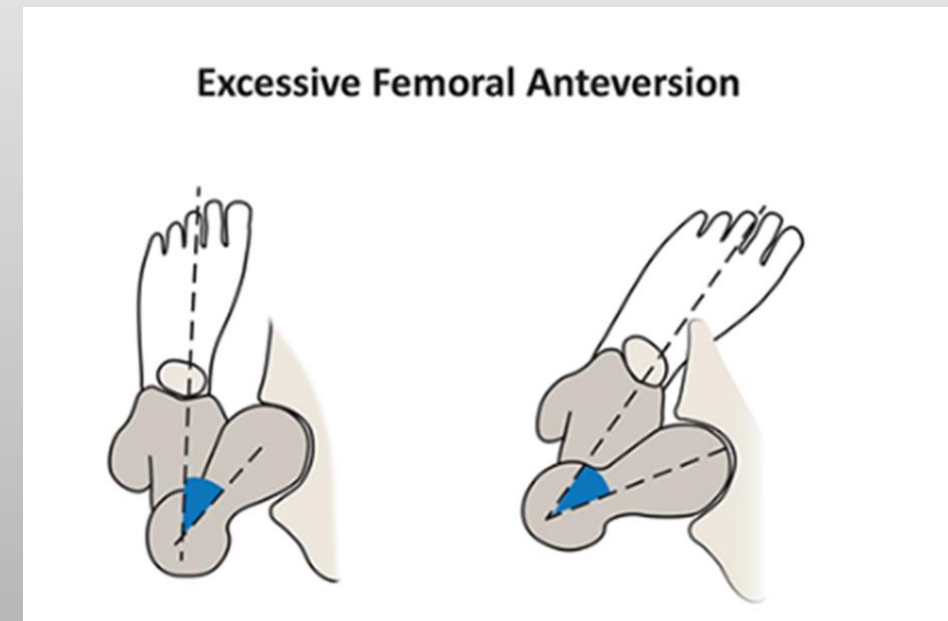
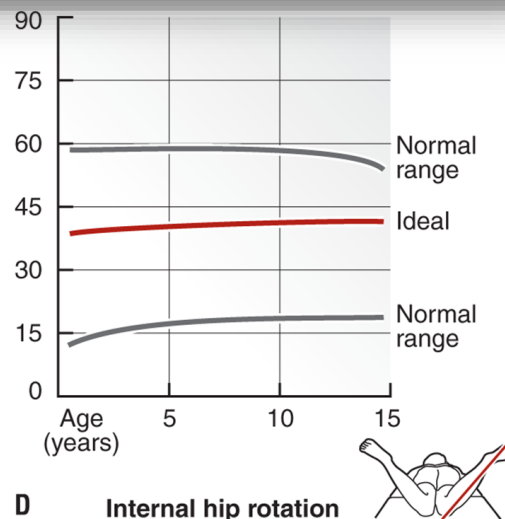
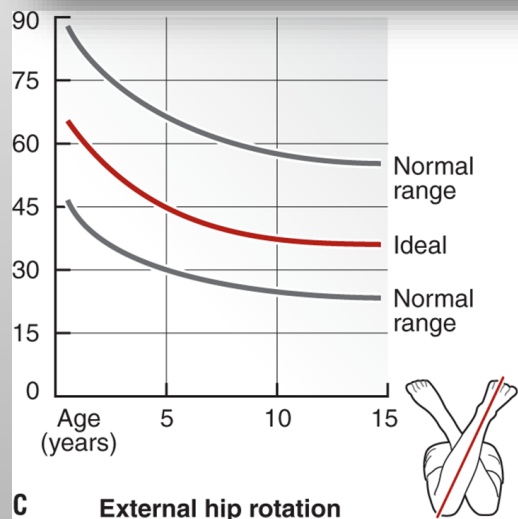
Foot - Progression Angle



Hip Rotation



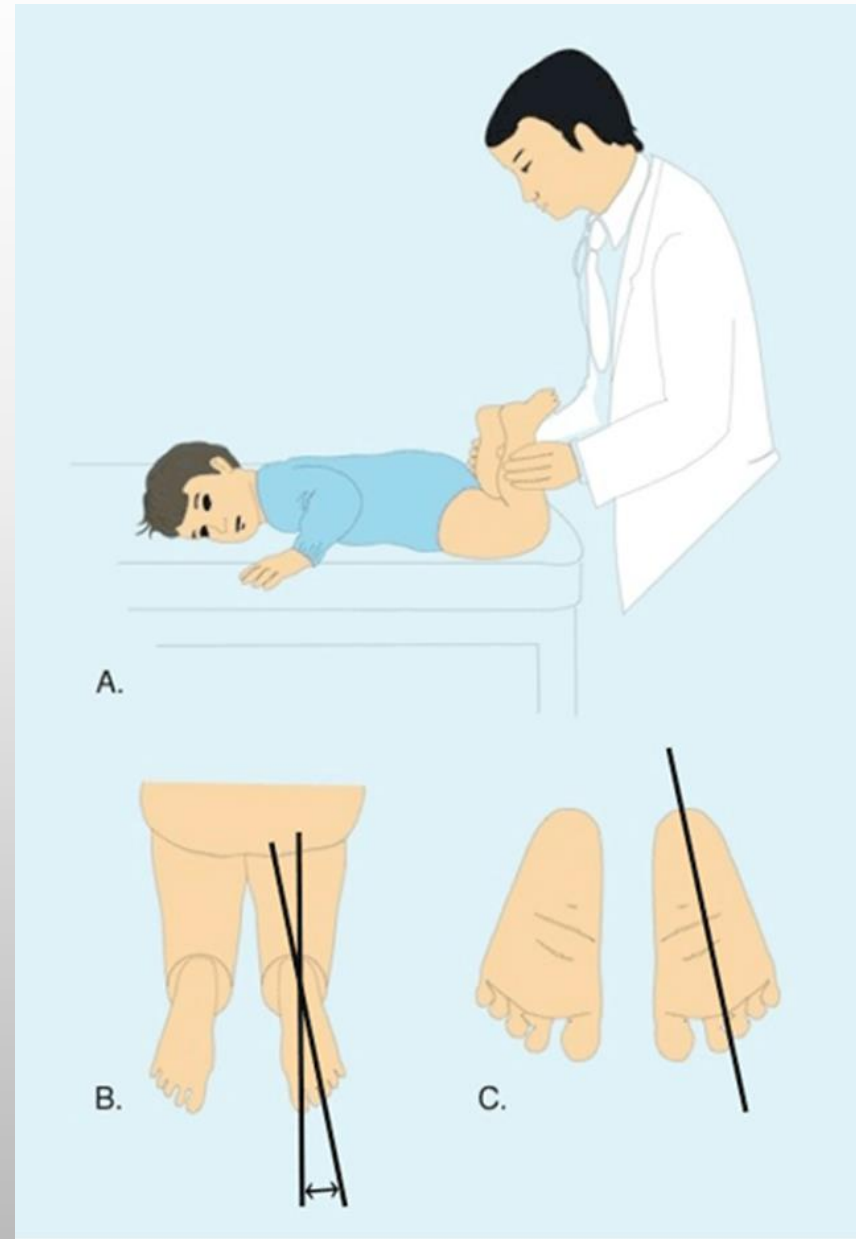
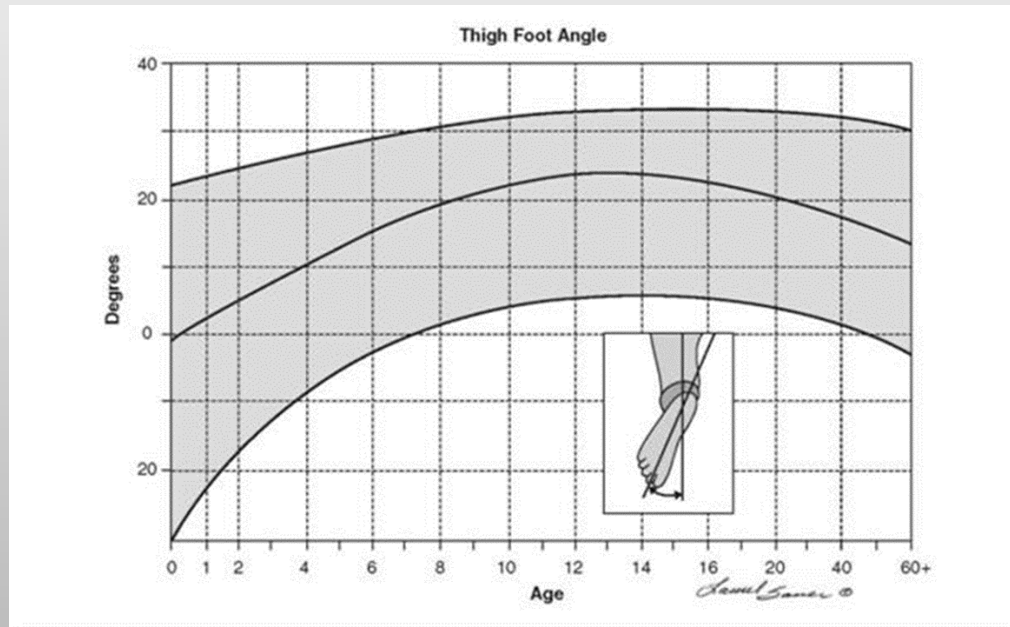
- Rotation » femoral version
 - ↑ Anteversion = ↑ IR
 - ↑ Retroversion = ↑ ER



Source: T.E. Davenport, K. Kulig, C.A. Sebeliski, J. Gordon, H.G. Watta: Diagnosis for Physical Therapists: A Symptom-Based Approach: www.FADavisPTCollection.com Copyright © McGraw-Hill Education. All rights reserved.

Thigh-Foot Axis

- Measure of tibial torsion
 - Internal
 - External

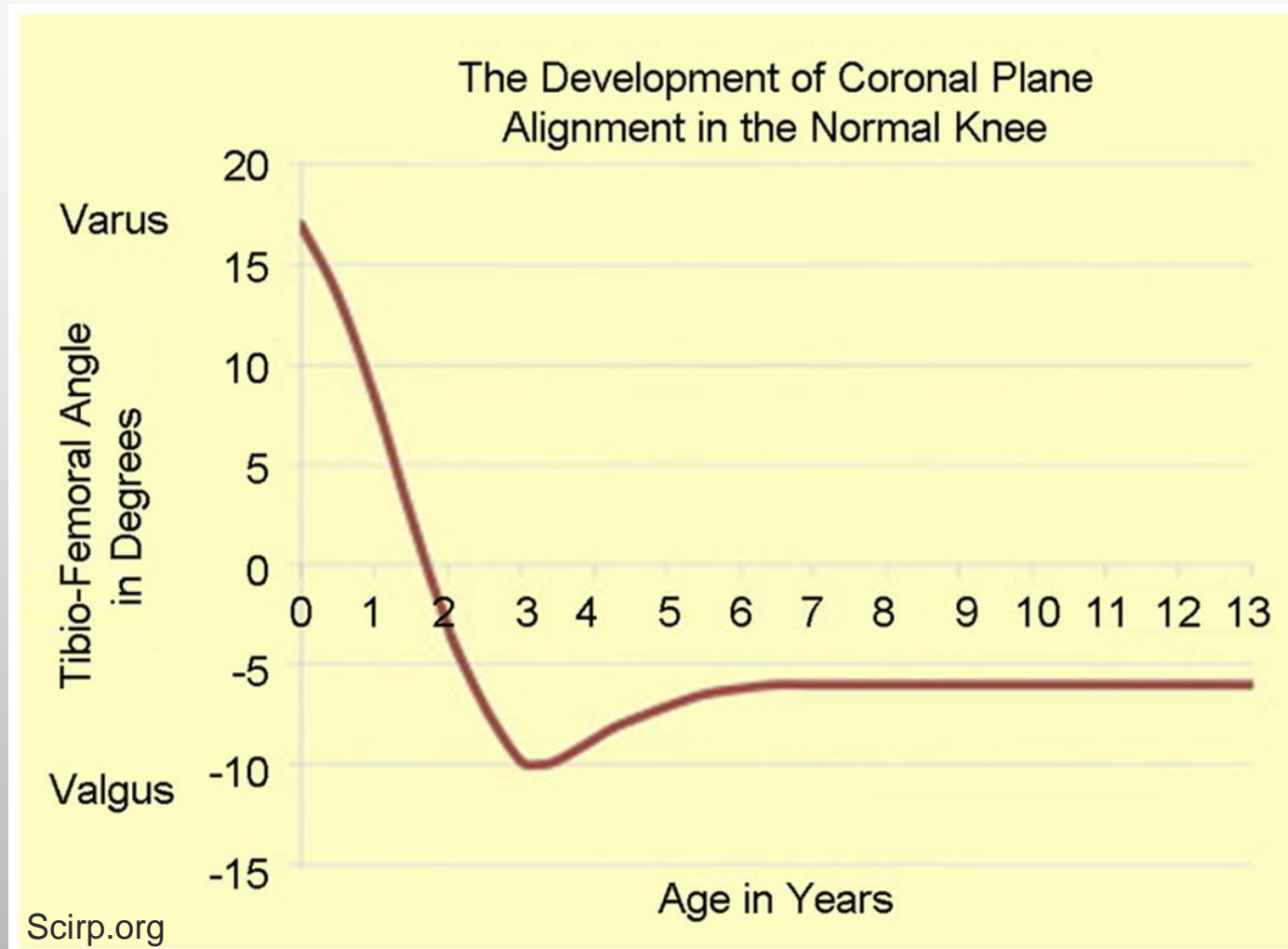


Foot Deformities (Most Common)

- Metatarsus Adductus (in-toeing)
- Flexible Flatfeet (out-toeing)

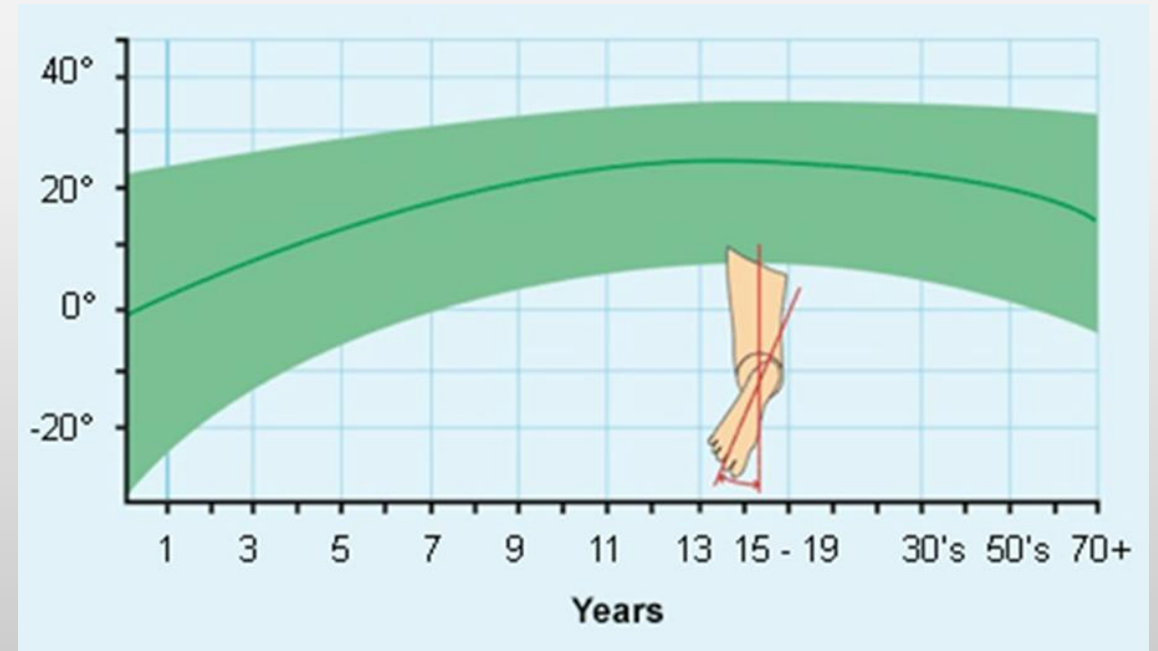


Angular Deformities



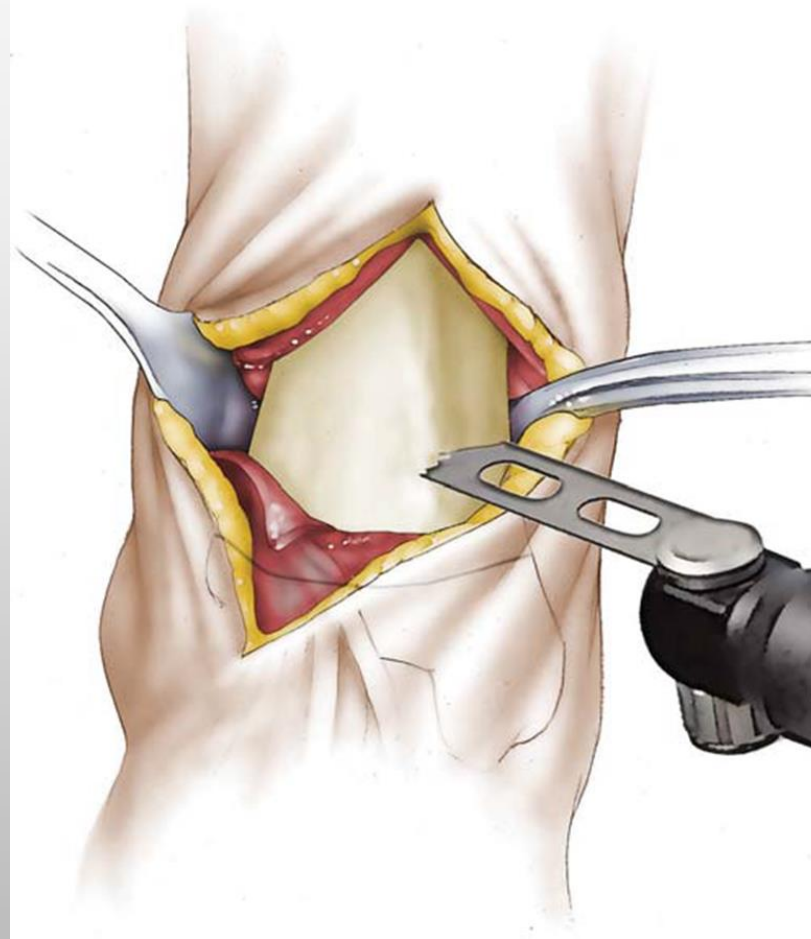
Natural History of Internal Tibial Torsion

- Spontaneously improves by age 4-6
- NO long-term sequelae
- Brace/therapy DO NOT alter natural history



Surgery for Internal Tibial Torsion After Age 9

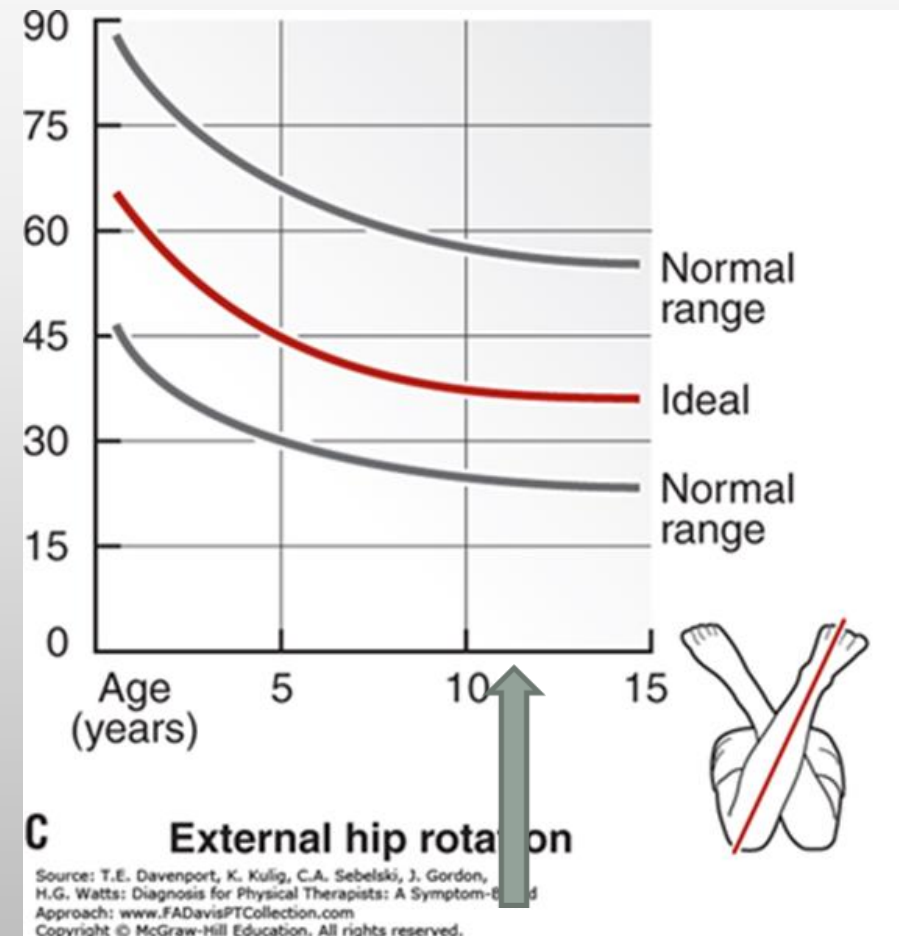
- Asymmetry
- Functional concerns
 - Tripping
- Physical appearance



Cut fibula for $> 30^\circ$ correction

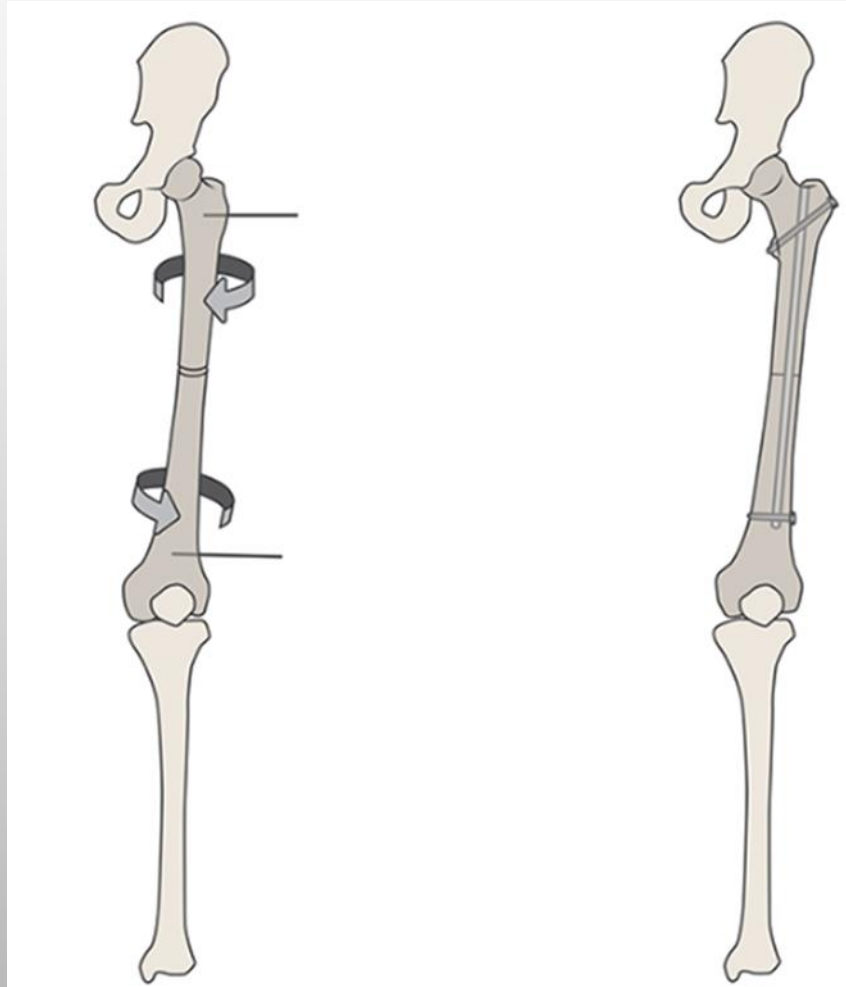
Natural History of Femoral Anteversion

- Spontaneously improves by age 10
- NO long-term sequelae
- Brace/therapy DO NOT alter natural history



Surgery for Femoral Anteversion after age 10

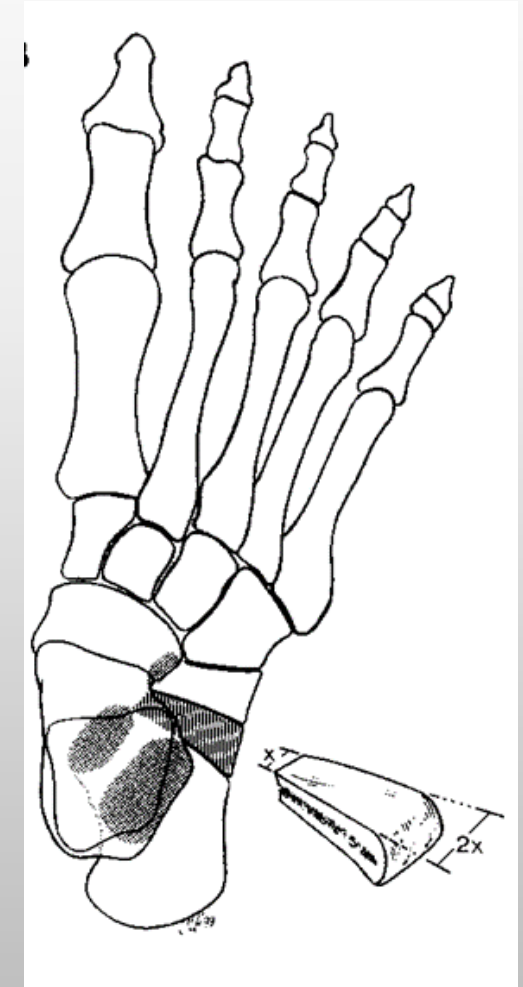
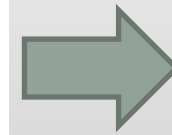
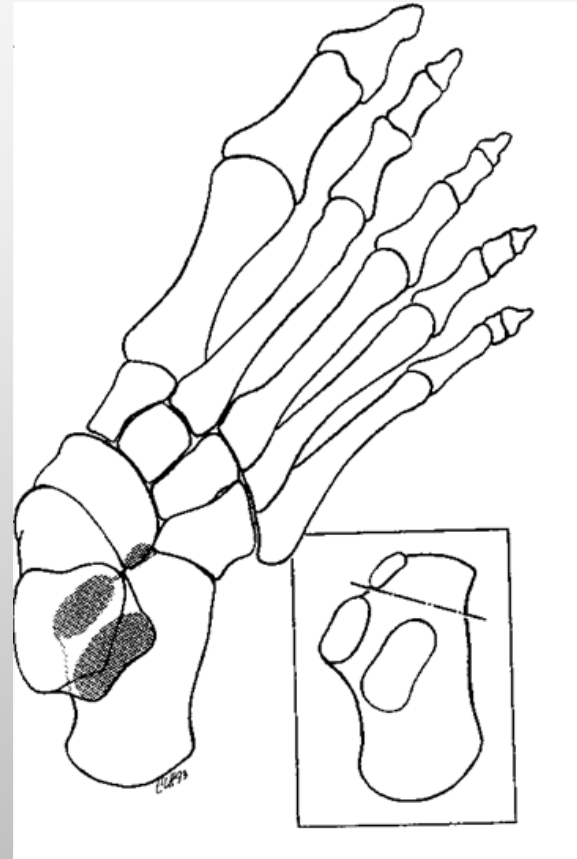
- Asymmetry
- Functional concerns
- COSMESIS



- **Midshaft osteotomy**
 - Correct rotation only
- **Proximal or distal osteotomy**
 - Correct rotation and deformity

Foot Deformities

- Metatarsus adductus
 - Treat rarely (severe cases)
- 20% of adults have flatfeet
 - MOST are minimally symptomatic



Lateral column lengthening after age 9

Lower Extremity Rotational Deformities

- Remember:
 - Evaluation
 - Natural History
- MOST are NORMAL children
- Who needs surgery?
 - Asymmetry
 - Severe deformity

