

Current status of Bowlegs and knock knees in children

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Bowlegs



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Knock knees



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**1– Commonest L.L problems
in daily practice.**

2= Unnecessary Orthosis

3= Great concern to parents.

**4= Most apparent at the start
of walking >10m**

**5= The physician must be able
to diff. between those def.
which resolve spontaneously
& those will not.**

The normal evolution of leg shape

All normal infants are born with bow-legs

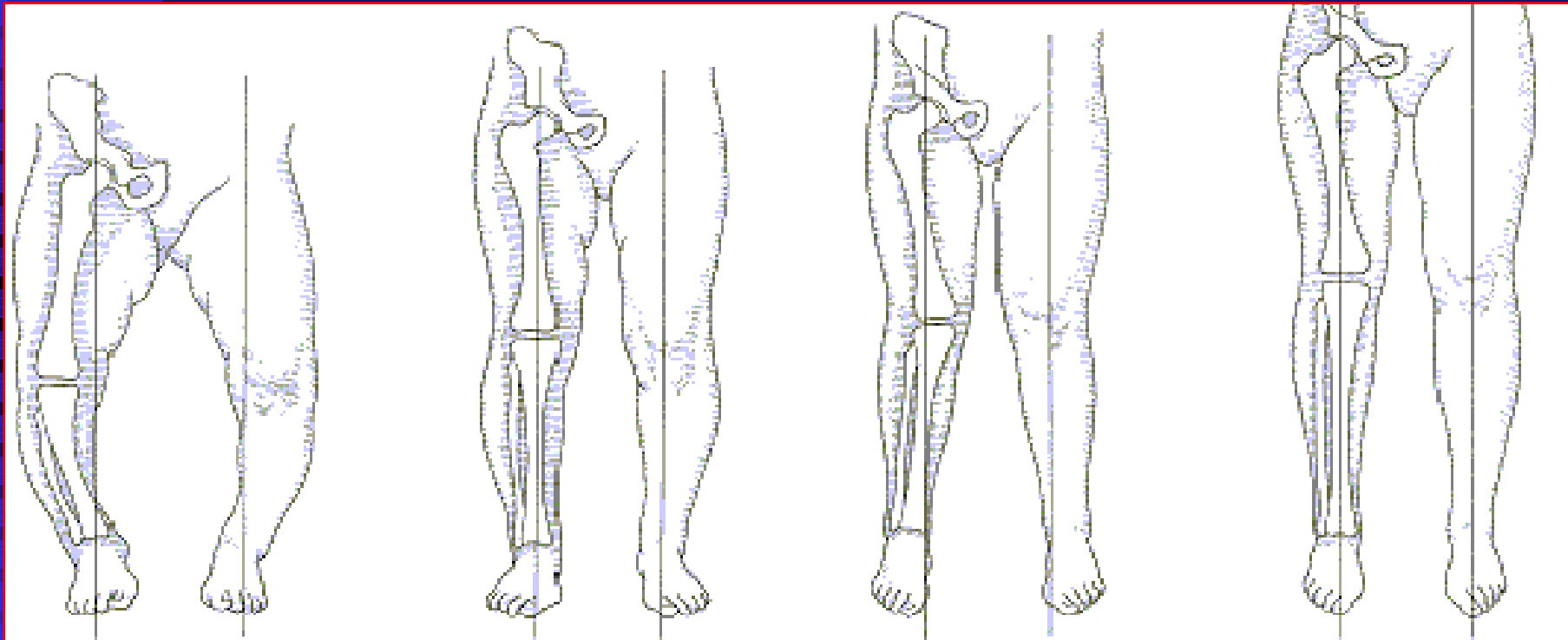
Development of knee alignment

<1.5y

1.5-3y

3-6y

7-9y



**10-15 deg.
Varus**

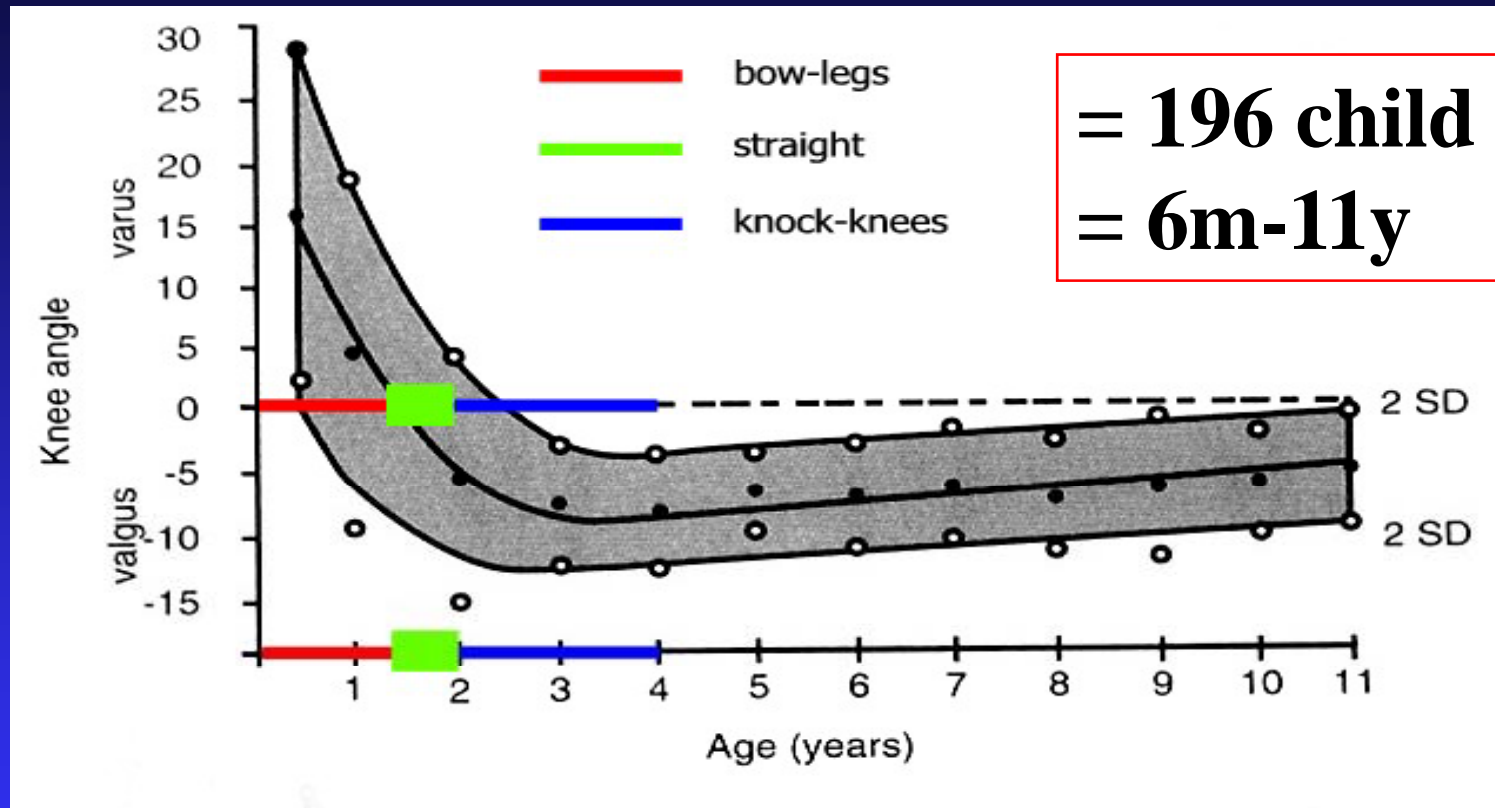
0 deg.

**10-12 deg.
Valgus**

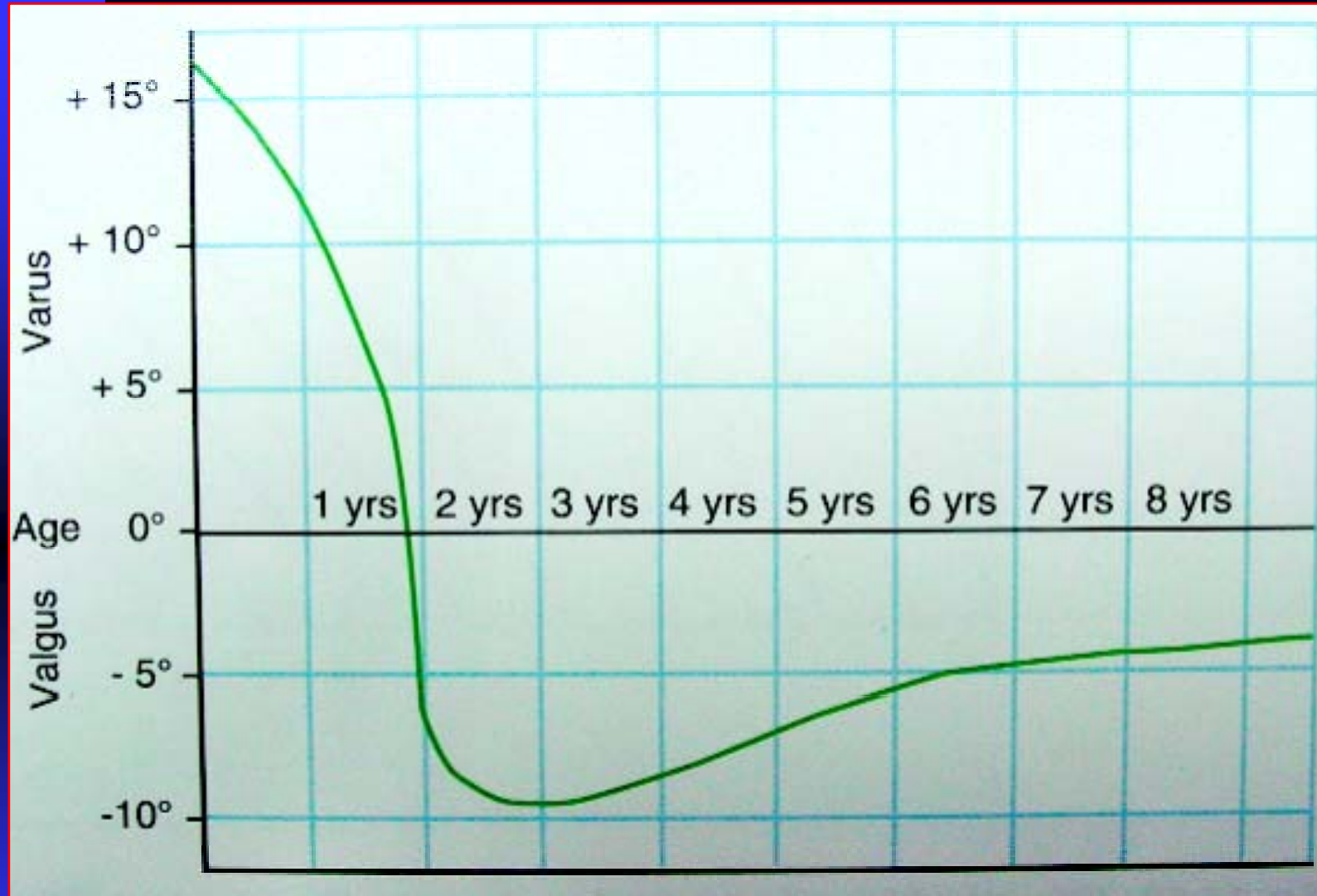
**5-6 deg.
Valgus**

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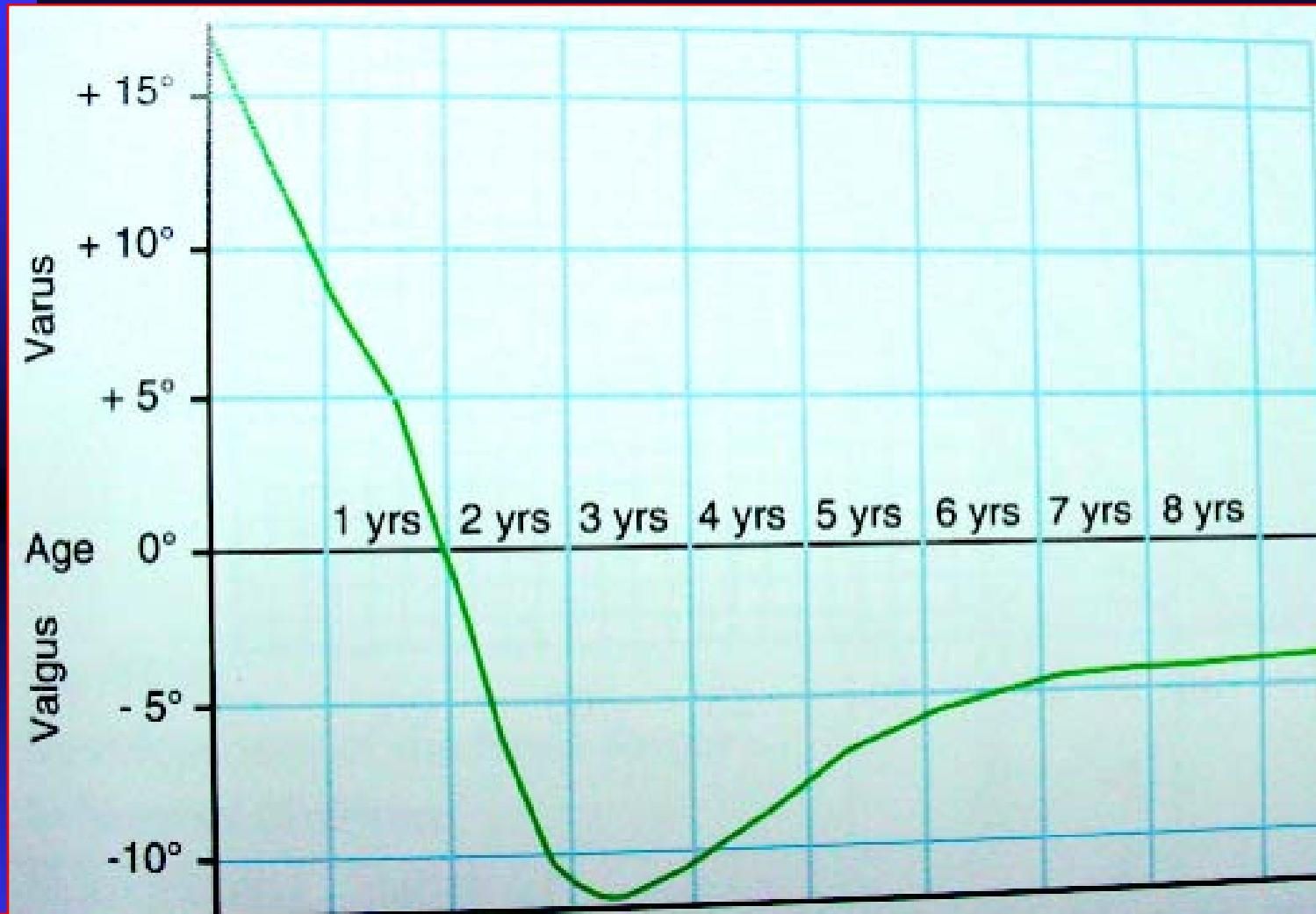
Development of knee angle in normal children



Heath, Staheli :JPO 1993

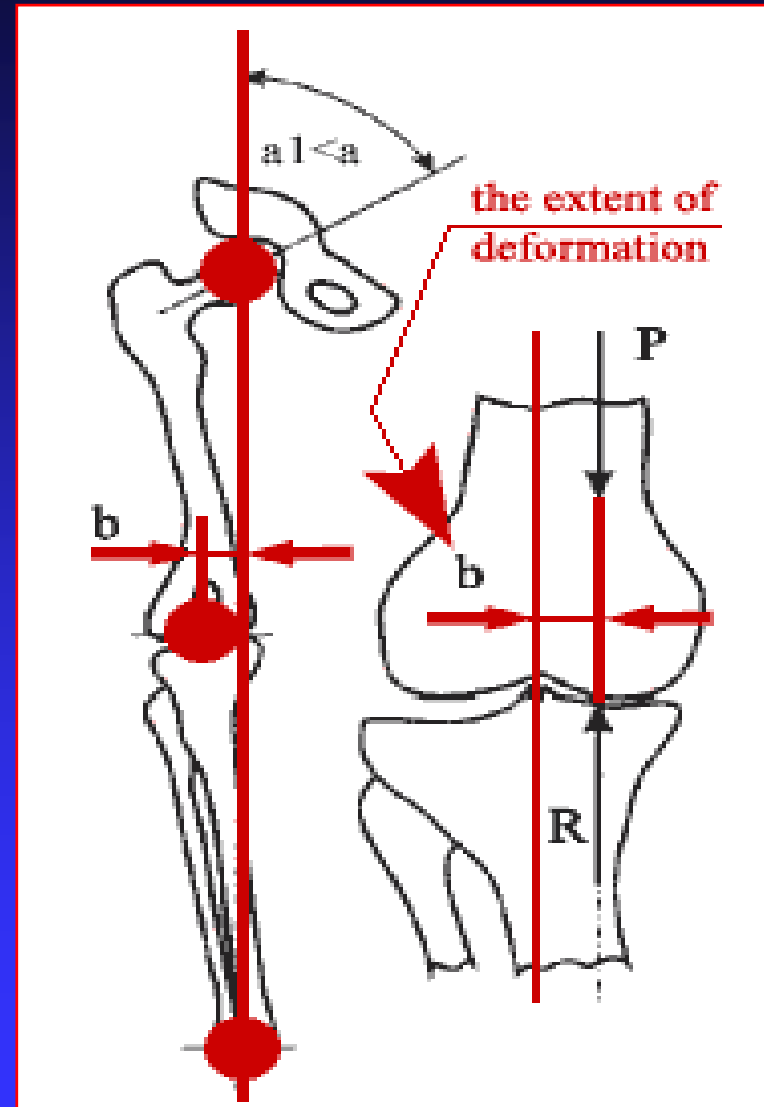
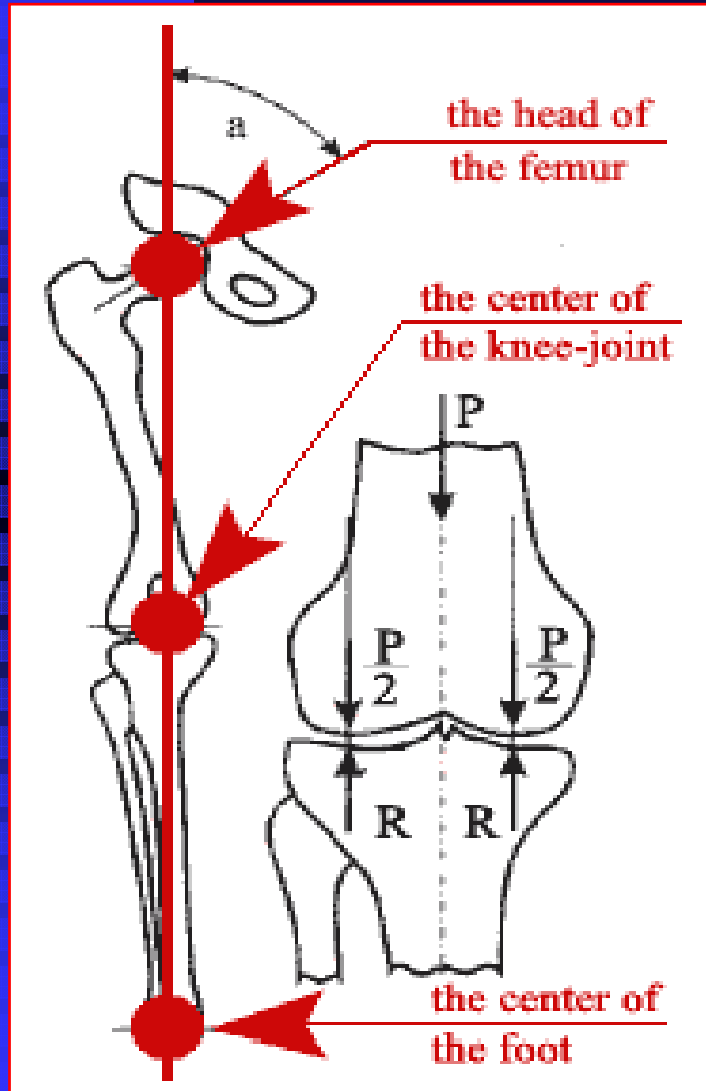


Tibiofemoral angle in Girls, Salenius P, 1977, JBJS-A



Tibiofemoral angle in Boys, Salenius P, 1977, JBJS-A

Pathomechanics



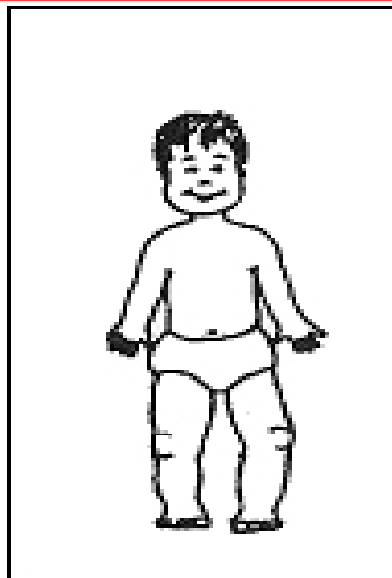
**Ext. femoral torsion + I Tibial T →
Lat. Deviation of the Knee axis →
Lat.thrust on the knee → Bowing**



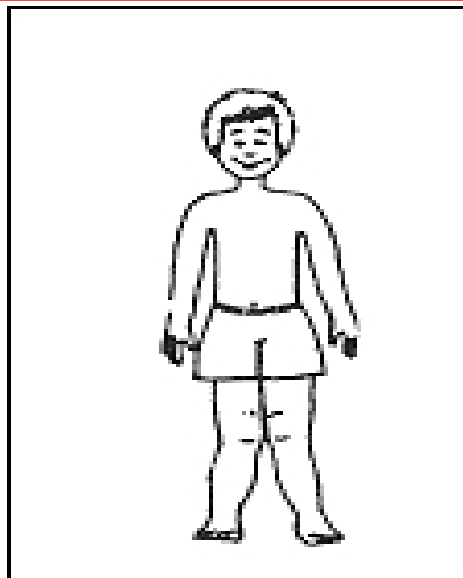
How bowing change to valgus ?

Pelvic widening

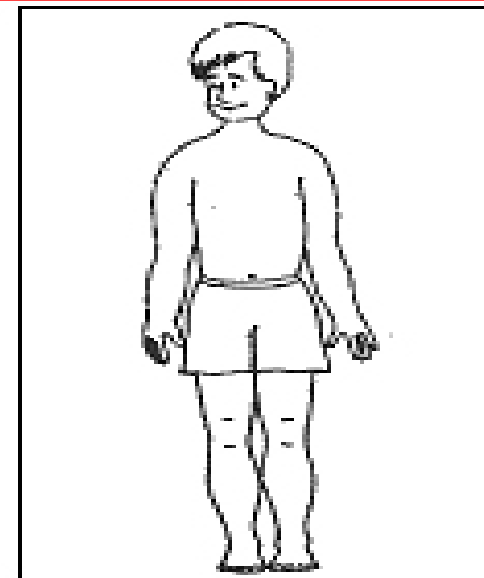
Pelvic growth gets out of step with the Growth of the femur → knock knees



Bowlegs



Knock-Knees



Normal

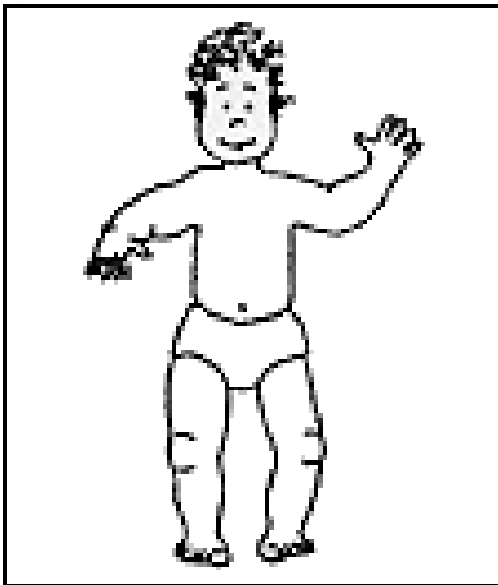
Forms of bowlegs

A- Physiological

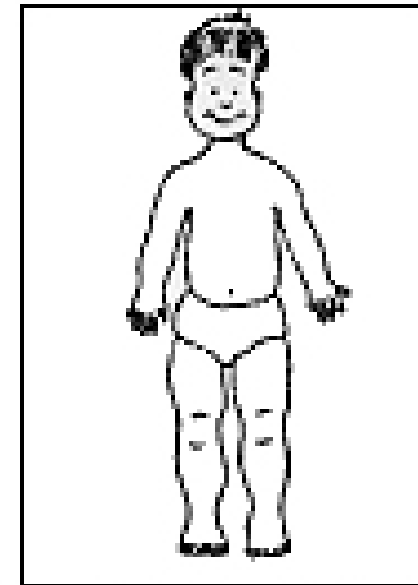
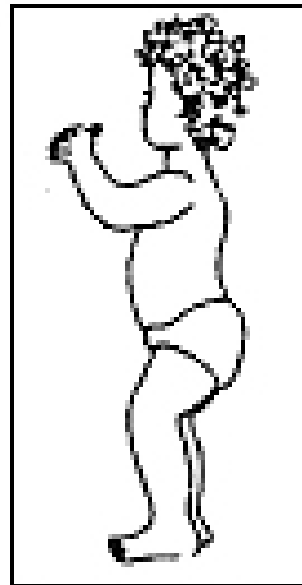
1. Distal femoral angulation
2. Px tibial angulation.
3. Apparent than real (Flexed knee).
4. Distal tibia bowing :

B- Pathological.

Apparent than real (Flexed knee).



Apparent bowleg occurs when the child stands with hips and knees flexed.



When the child lies down and extends the hips and knees, the legs are straight.

Child with ITT stands with the knee flexed

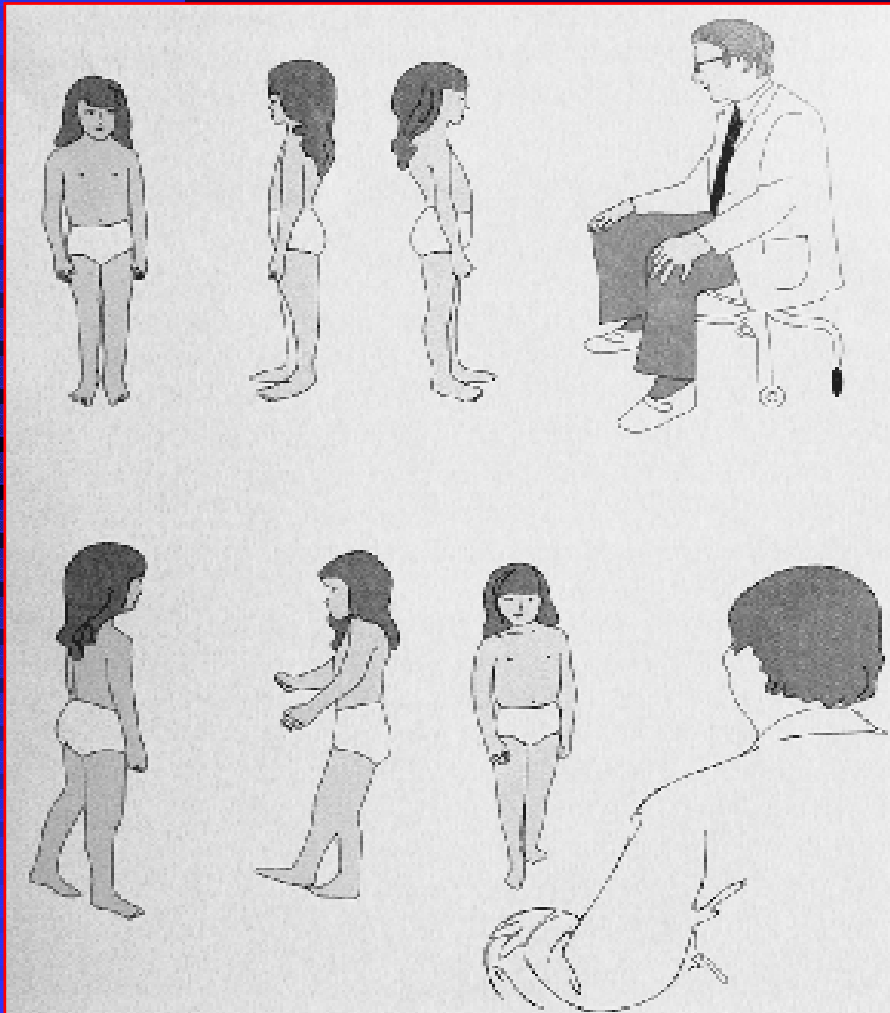
How you should approach such cases ?

Your systemic approach

Take the family concern seriously !!!!



Careful history & examination



History

= +ve FH

= Diet

= Sun Exposure

= Short stature

= Asymmetry

= Out of sequence

– Severe

Measure the ICD / IMD

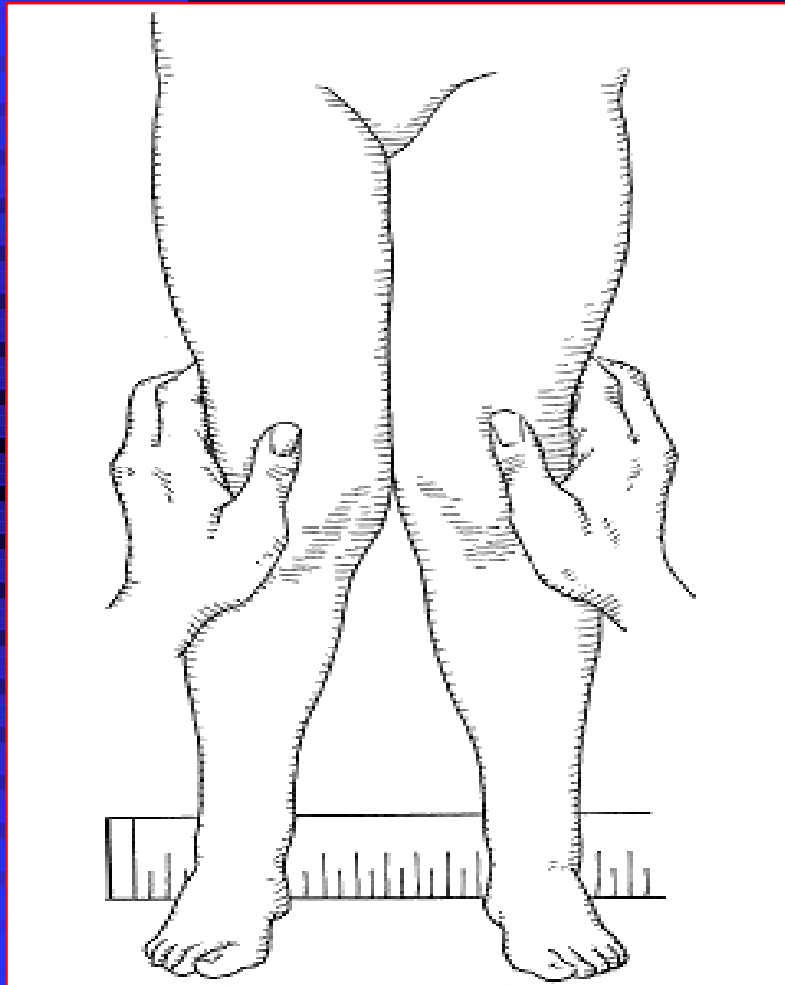


FIGURE 2 - clinical measurement of genu valgum.

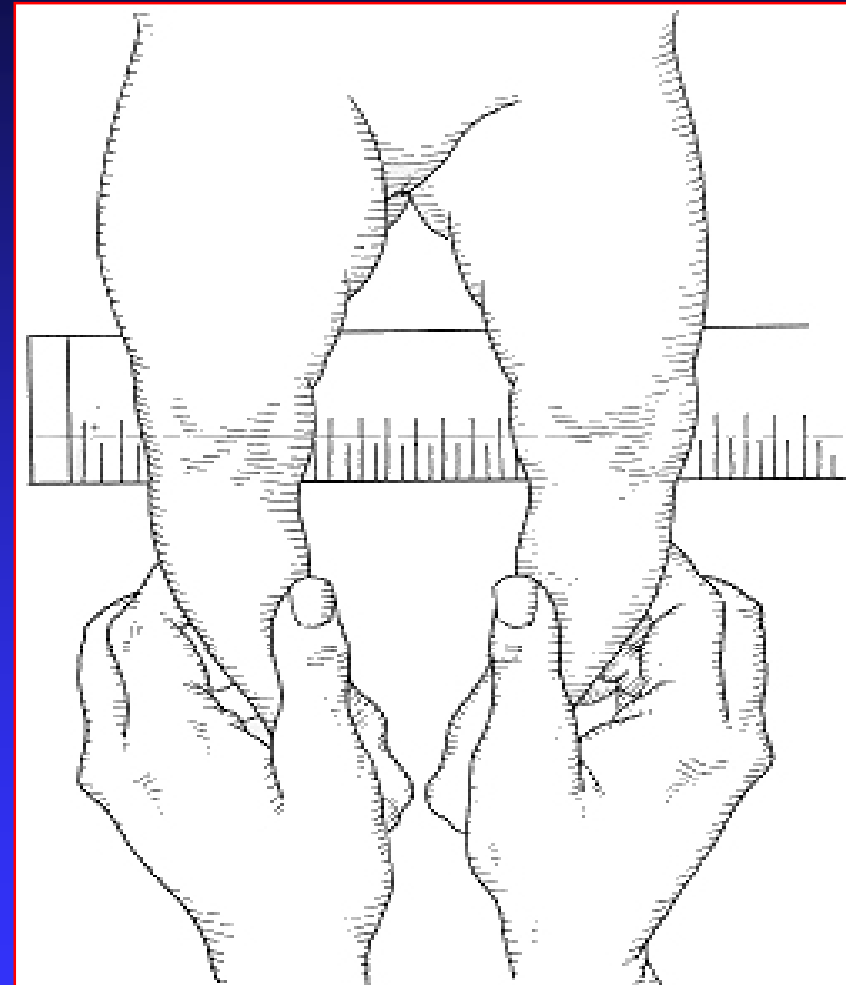
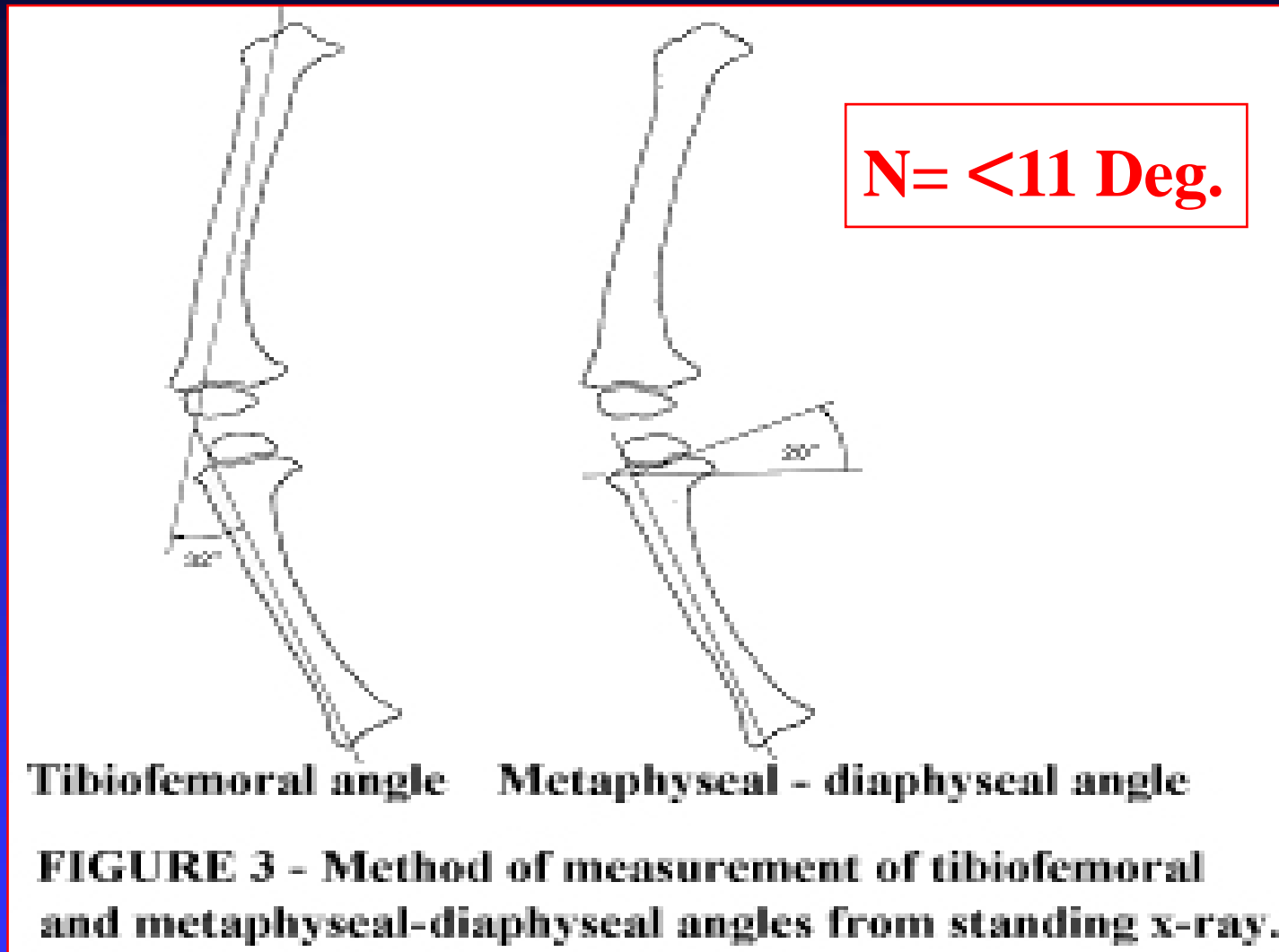


FIGURE 2 - Clinical measurement of genu varum.

Measure the angles

- = A more accurate measurement → tibial femoral angle as seen on the standing AP X-ray.
- = One must be careful that the legs are in **neutral rotation** when the X-ray is taken, as IR or ER will alter this angle.



Commonly Asked Questions

1-Early walking does not cause bowed legs.

**Walkers are used by
> 250,000 babies in the UK.**



Physiological bowing does not require bracing or surgery.





No relation between bowlegs & O.A

The Chalange

**Which is physiological ?
Which is pathological?**

Diagnosis of normality : **7S**.

- = A **S**ymptomatic , = **S**ymmetrical.
- = Not **S**evere = **S**uppleness (Flexible).
- = No **S**keletal dysp. (Short stature).
- = No **S**ys. Dis. (Genetic,metabolic).
- = **S**equence : Bowing in infants /
knock knee in young children.

1. Bowleg > 3 y & knock-knee > 7y.

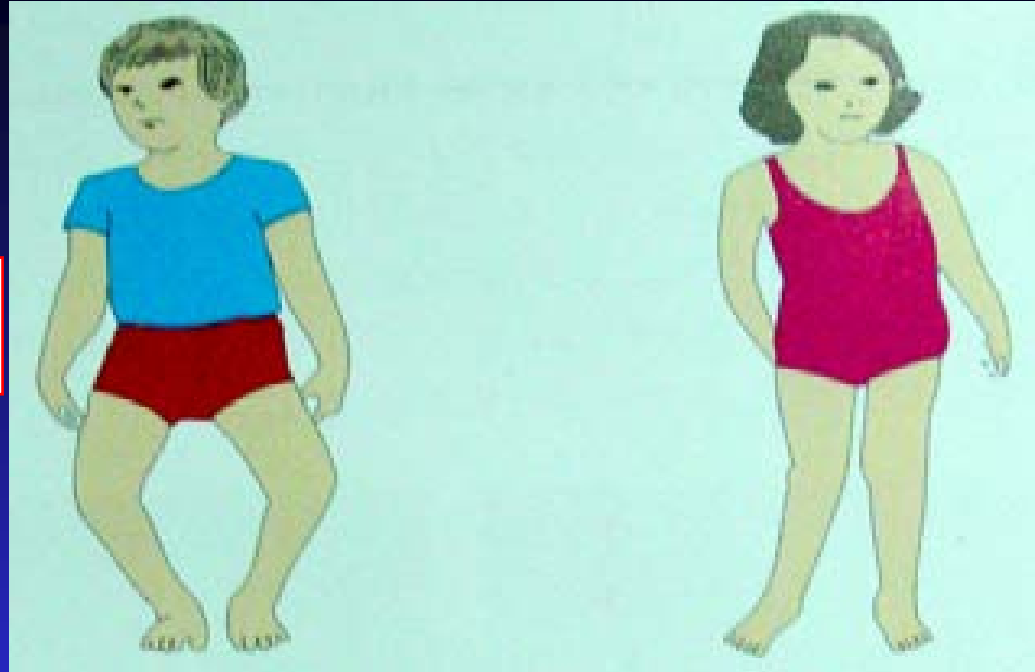
Knock-knees > 15° is abn.

**2-If the IC or IM distance >3 inch,
or rapidly progressing,
i.e. > 1/2 inch within 6M.**

3- Symptomatic (pain or limp)

**4- Associated signs of Blount's ,
Rickets, or other disease synd.**

Severe



Unilat.

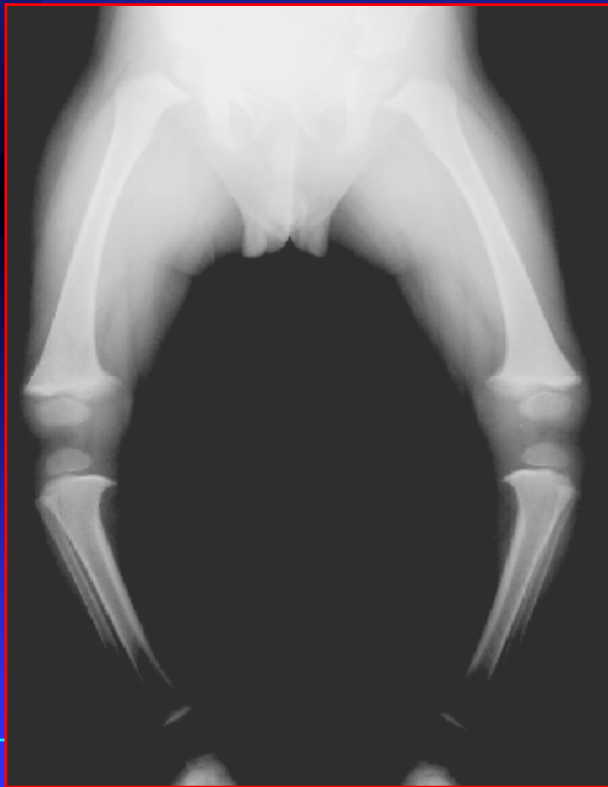
Family Hx



Short stature

Pathological Types

Rickets



Skeletal dysplasia



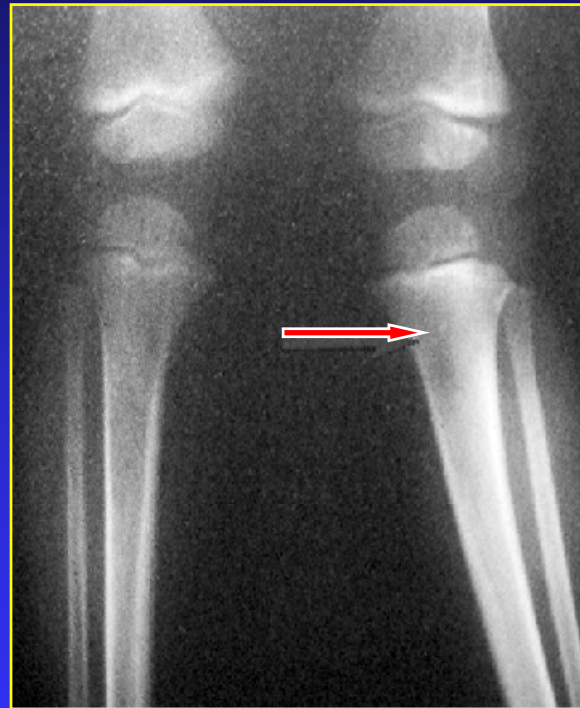
Tibia vara (Blount's dis.)



* FFC dysplasia.



Post trauma or infection



Historical Corrective Orthosis



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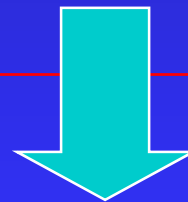
Figure 108 Nicholas Andry (1658–1747)



Andry's Tree

Ancient Medicine & Orthopedics

- = Shoe modifications
- = Exercises to correct deformity
- = Manipulation and encouraged posture for sitting
- = Orthosis




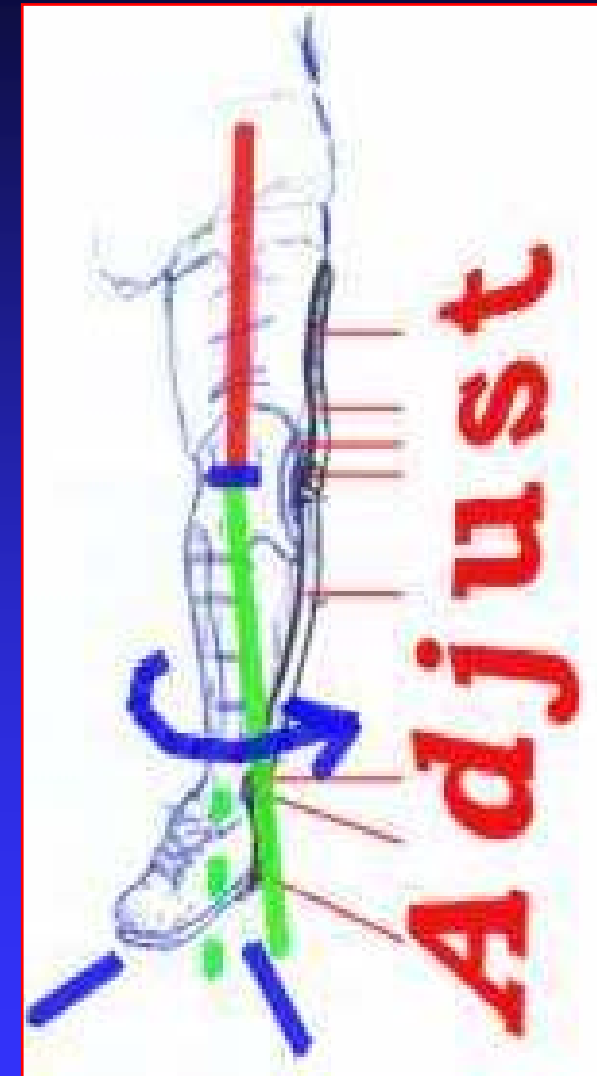
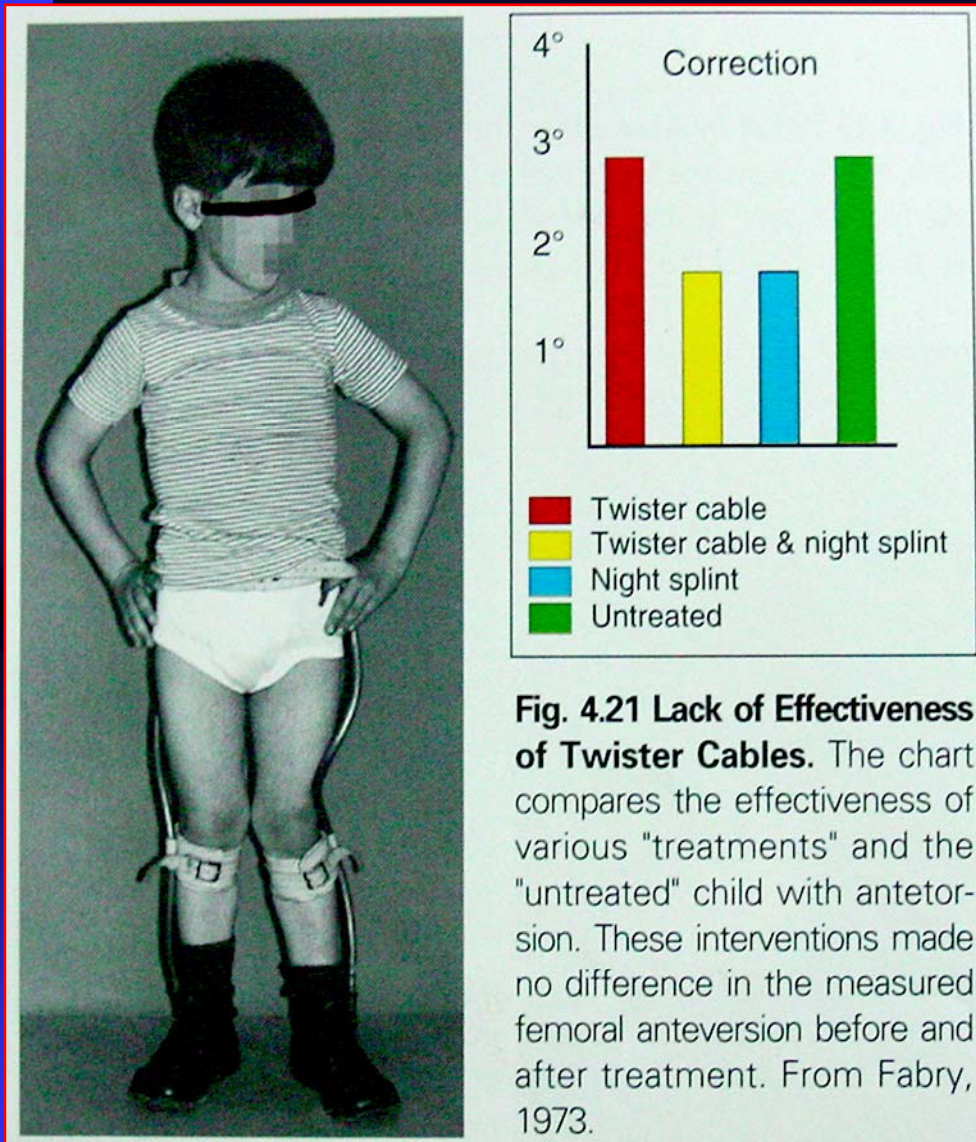
T.B, Osteomyelitis, Rickets, Polio

The occurrence of the physiological variations at that time was considered as a manifestations of serious disease



Leg braces

- 
- = Correction of the deformity.**
 - = Delighted family**
 - = The physician impressed**



Operative Correction !!!!

= Def. outside the range.

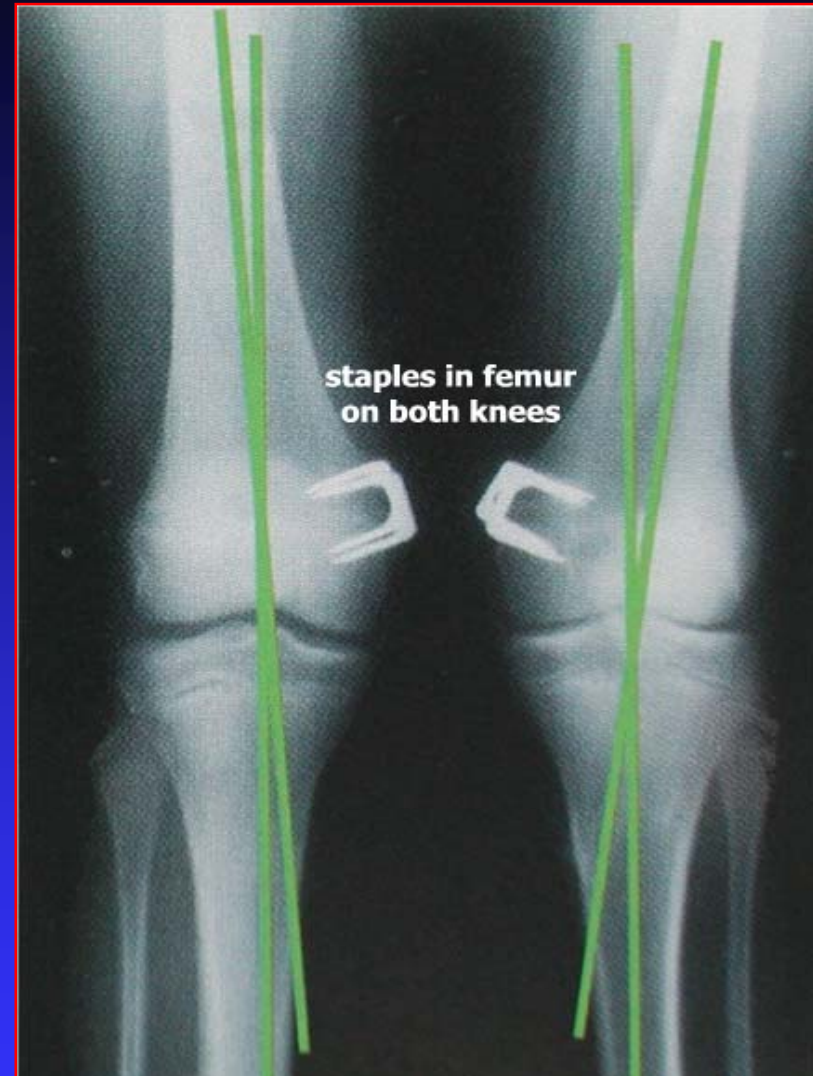
= Significant functional &
cosmetic disability.

= 0.1% .

= >10 y



Pre op. knock-knees



post op. with staples

Our observations

A prospective analysis of children with angular knee def. seen at our Pediatric Orthopedic clinic - JUH

= 155 Child

= 1-11 year

= M:F 1.12:1 (82:73)

15 Cases → Unnecessary Braces
29 = = = → Advised for braces



79 Child

65%

15 Child



28 Child

19.25%



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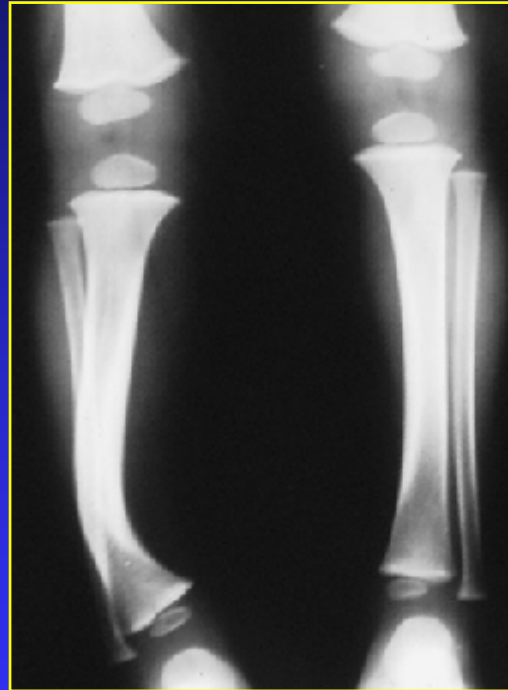
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12 Child

8.8%



2 Ant.lat bowing



Larsen's

2 Osteochondroma



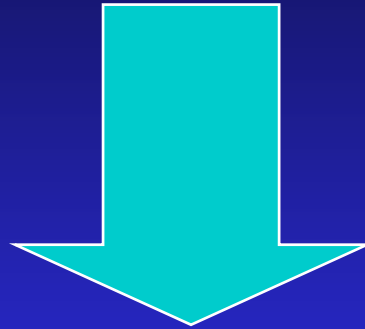
FFC Dysplasia



One case Post renal failure



One Case Post infection



Genu Valgum deformity due to growth arrest of lat. Part of distal femur

Idiopathic



Conclusion

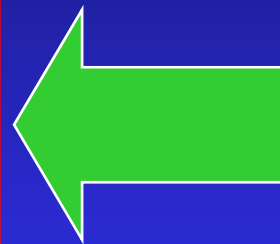
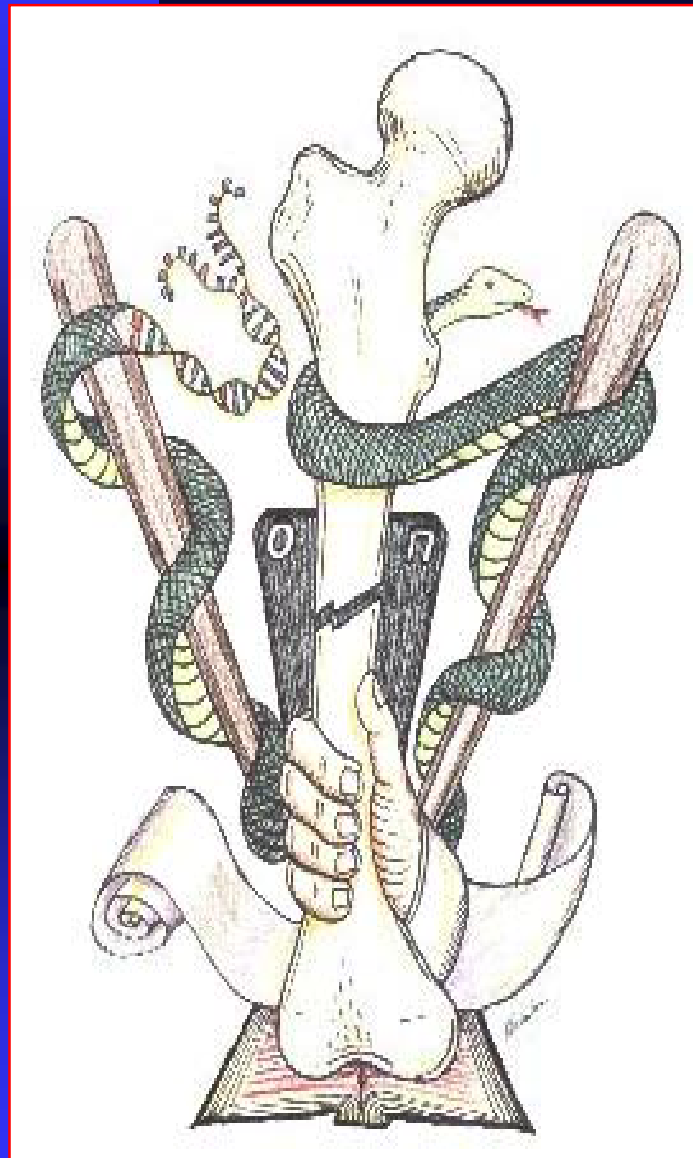
- = Correct diagnosis & measuring severity.to exclude pathology.
- = Effective R/ of Parents worry.
- = Rickets needs to be remembered

During normal development, children are bow legged and then become knock kneed. Special shoes or wedges make no difference.





**= Spontaneous resolution
requires the magic of time.**



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THANK YOU