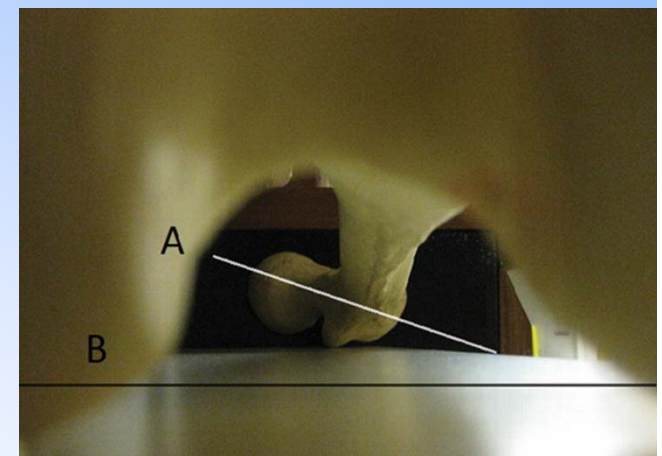
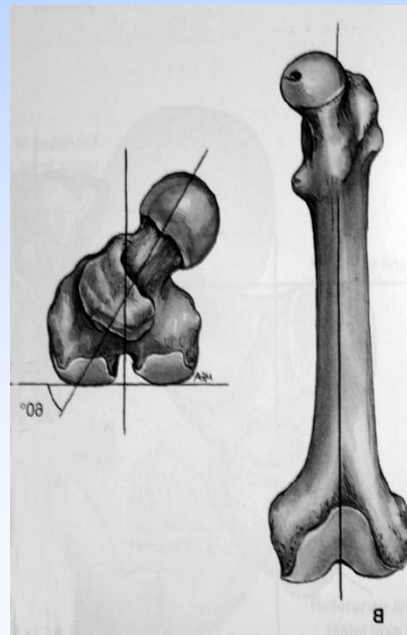
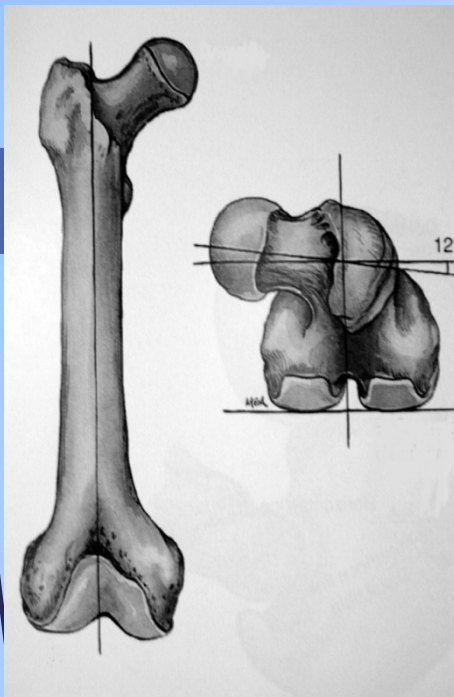




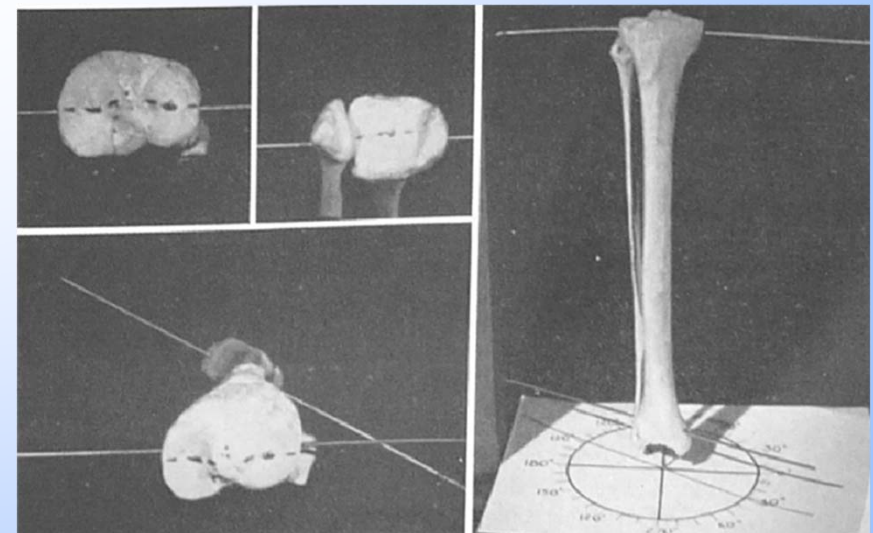
Учреждение образования  
«Гродненский государственный  
медицинский университет»

Диагностика торсионных  
деформаций нижних конечностей



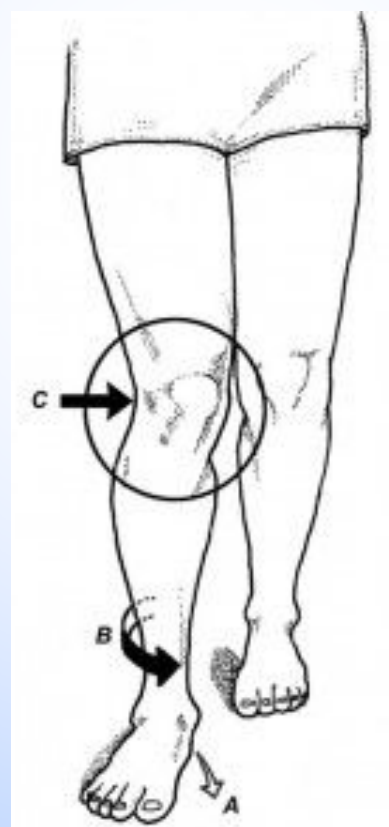
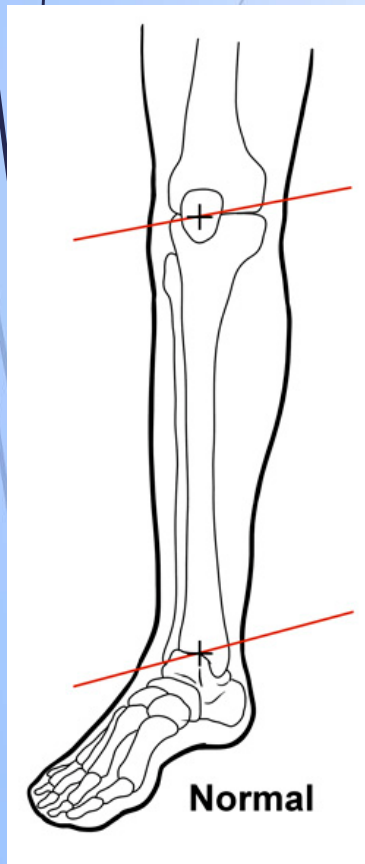
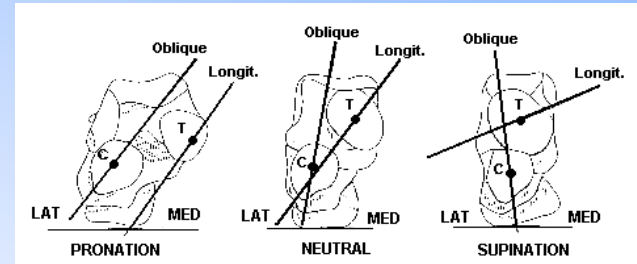
Normal version    Increased torsion

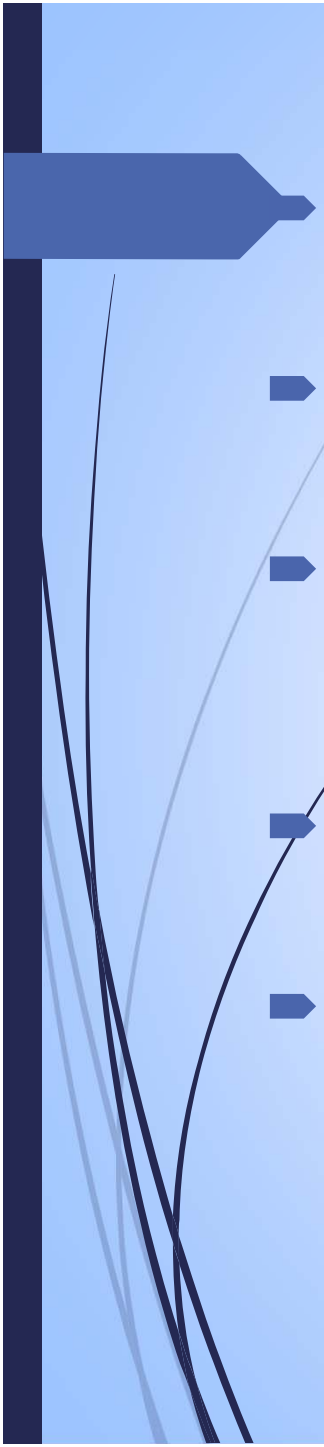
Version  
VS  
Torsion



**"Miserable malalignment syndrome":**

- Sport activity reduction
- Reduction of tolerance to mechanical stress
- Joint degeneration

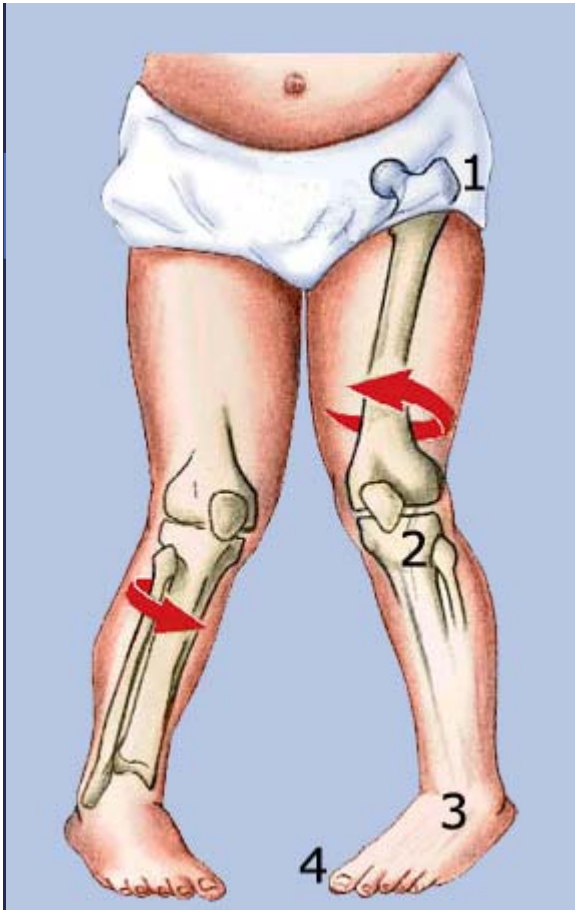




Torsional profile of lower extremities changes with skeletal growth

- ▶ Only screening method for torsion examination is visual control
- ▶ Persistent deformities lead to overloading, activity restrictions, increased risk of trauma and early joint degeneration
- ▶ Most deformity cases left without diagnosis and persist during life
- ▶ Early diagnosis and treatment will prevent progression of mentioned consequences of deformity

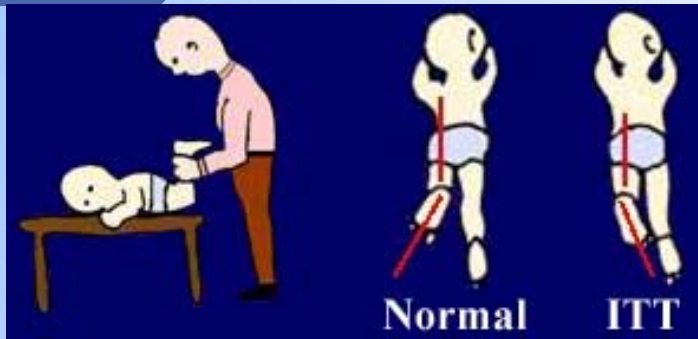




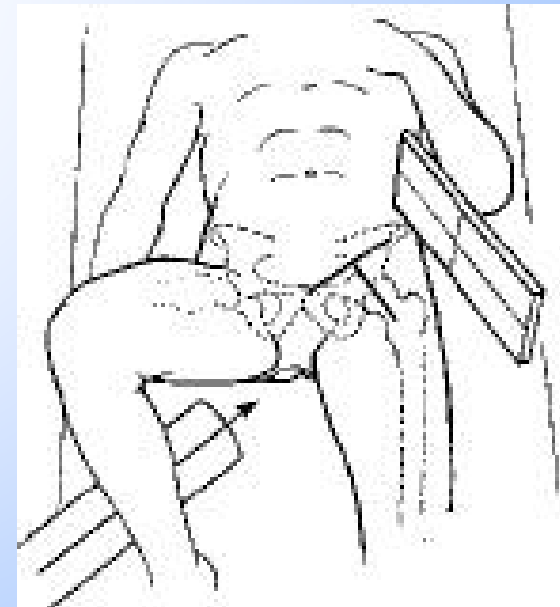
- Femur torsion vary strongly
- Usually torsion is symmetrical ( $4^\circ$  differ), 5% of population differ more than  $11^\circ$ , and 1% people have more than  $15^\circ$  difference
- Normal tibial torsion  $10-30^\circ$  of ext. rotation
- Femur -  $+10-20^\circ$  of antetorsion



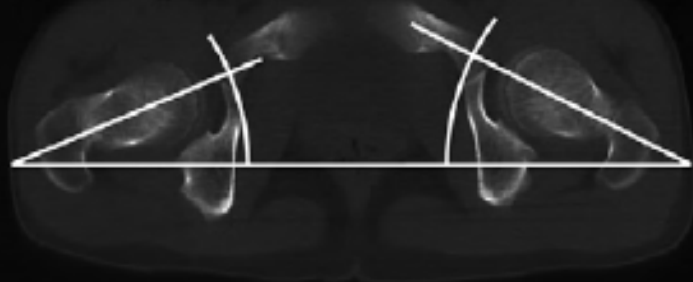
## Thigh Foot Angle



## Lower leg torsion



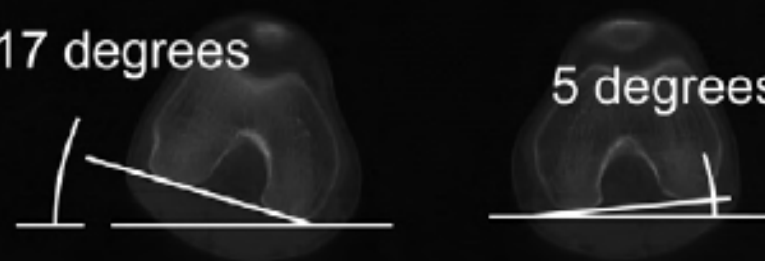
23 degrees 27 degrees



L

17 degrees

5 degrees



W 2000

L 500

Pos -386.0

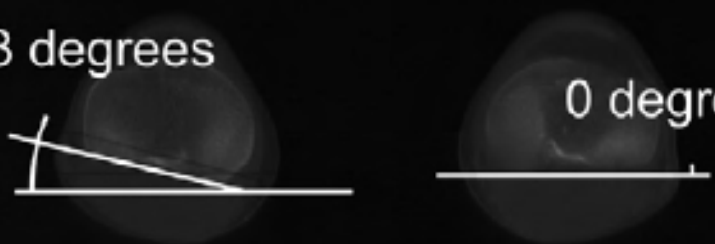
N Sc 5/1/1

Pos -770.0

Sc 4/1/1

13 degrees

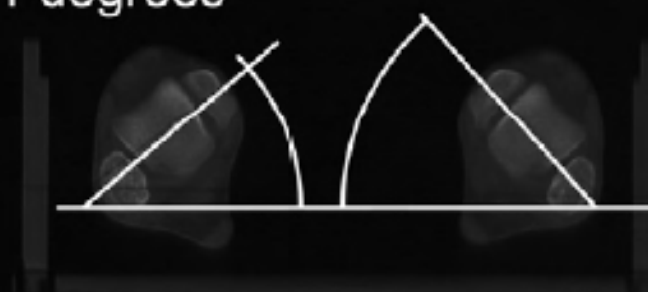
0 degrees



L

41 degrees

48 degrees



W 2000

L 500

Pos -24.0

Pos -359.0

3

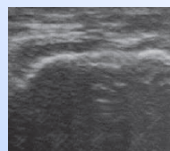
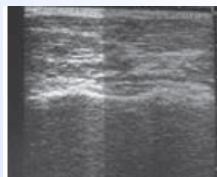
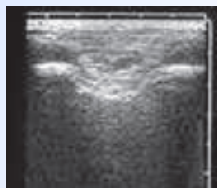
4



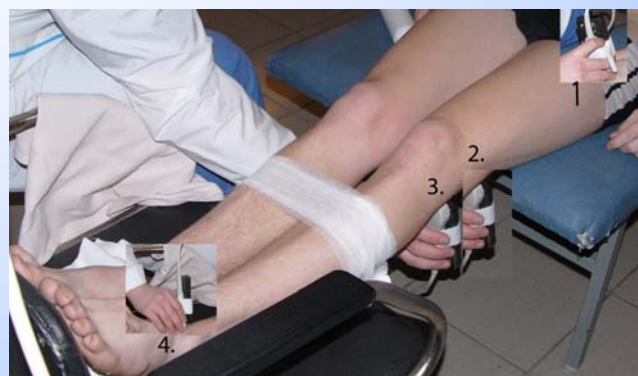
# Pt. examination

- ▶ Orthopedic examination
- ▶ USG screening \*
- ▶ 4D gait analysis\*
- ▶ Electromyography
- ▶ Stabilography\*
- ▶ Dynamic photoplantography\*
- ▶ Objective antropometry\*
- ▶ CT, MRI, X-Ray
- ▶ Surveys

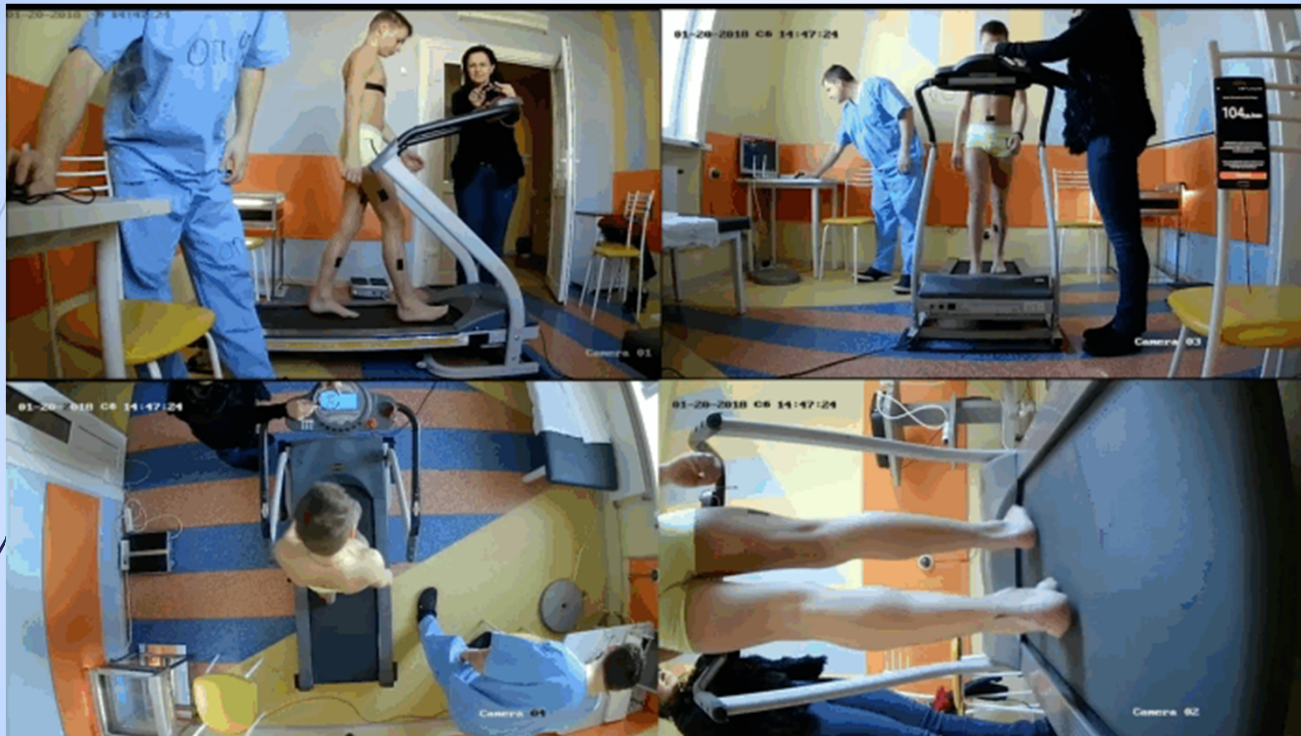




| Уровень | Dext |     | Sin |     |
|---------|------|-----|-----|-----|
| neck    | +22  | +18 | +17 | +16 |
| cond    | +4   |     | +1  |     |
| plato   | -6   | +36 | -3  | +34 |
| pilon   | +30  |     | +31 |     |



## 4D gate analysis



Observation  
5 criterions

➡ vs

4D gate analysis  
18 reproducible criterias

# Correction

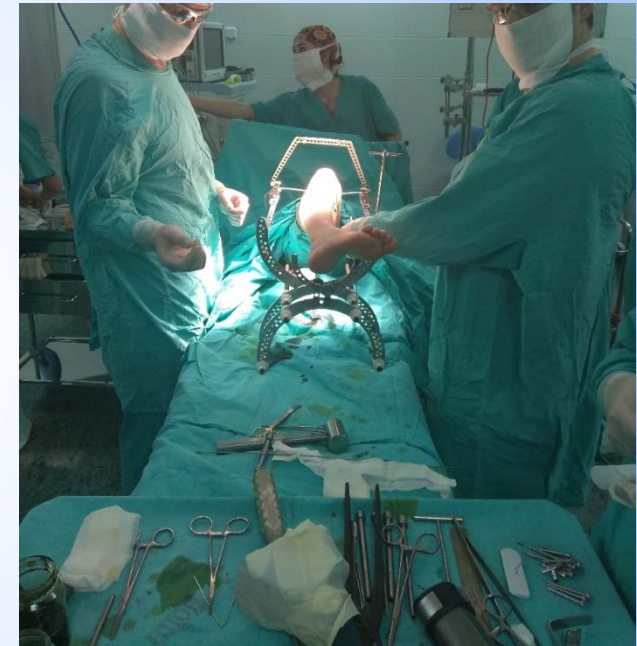
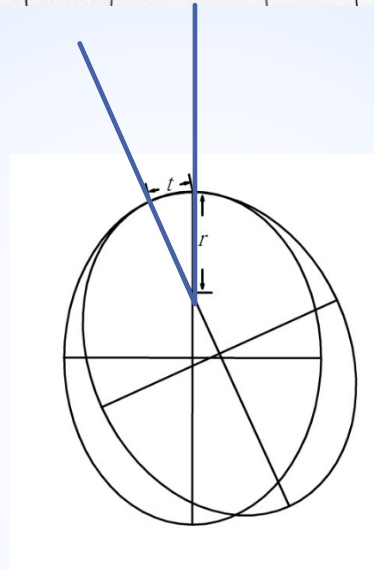
- ▶ Rehabilitation program
- ▶ Foot orthoses
- ▶ Talar screw
- ▶ **Femoral and tibial osteotomies (plaques and IM nails)**
- ▶ Growing plate surgery







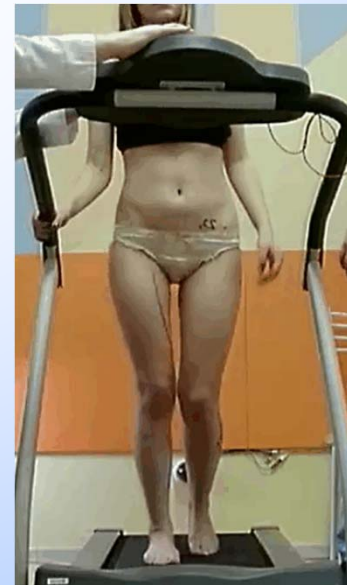








# Multiple methods of Pt examination





## Conclusion:

- 1. Early diagnostics and correction prevent pathological loads of joints.
- 2. Screening method of torsion examination reduces misdiagnosed cases
- 3. Minimal invasive correction prevents persistent of pathological.







Спасибо за  
внимание!

Дзякуй  
за ўвагу!

THANK YOU FOR  
ATTENTION!