

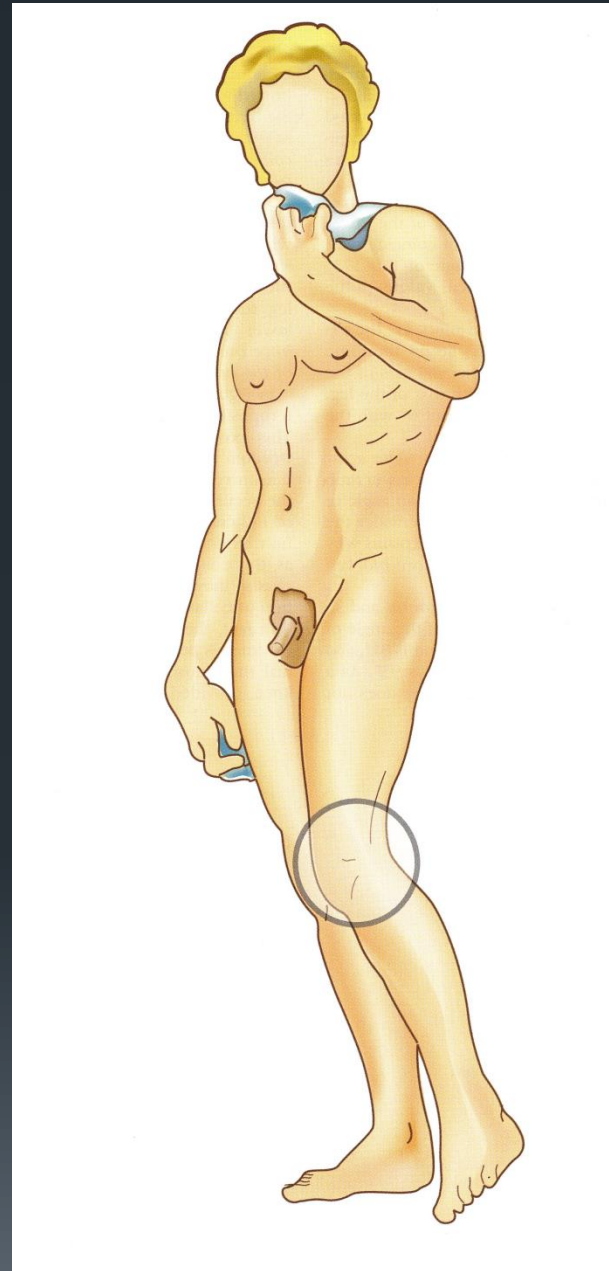
# Kineziologie dolní končetiny



Petr Pospíšil

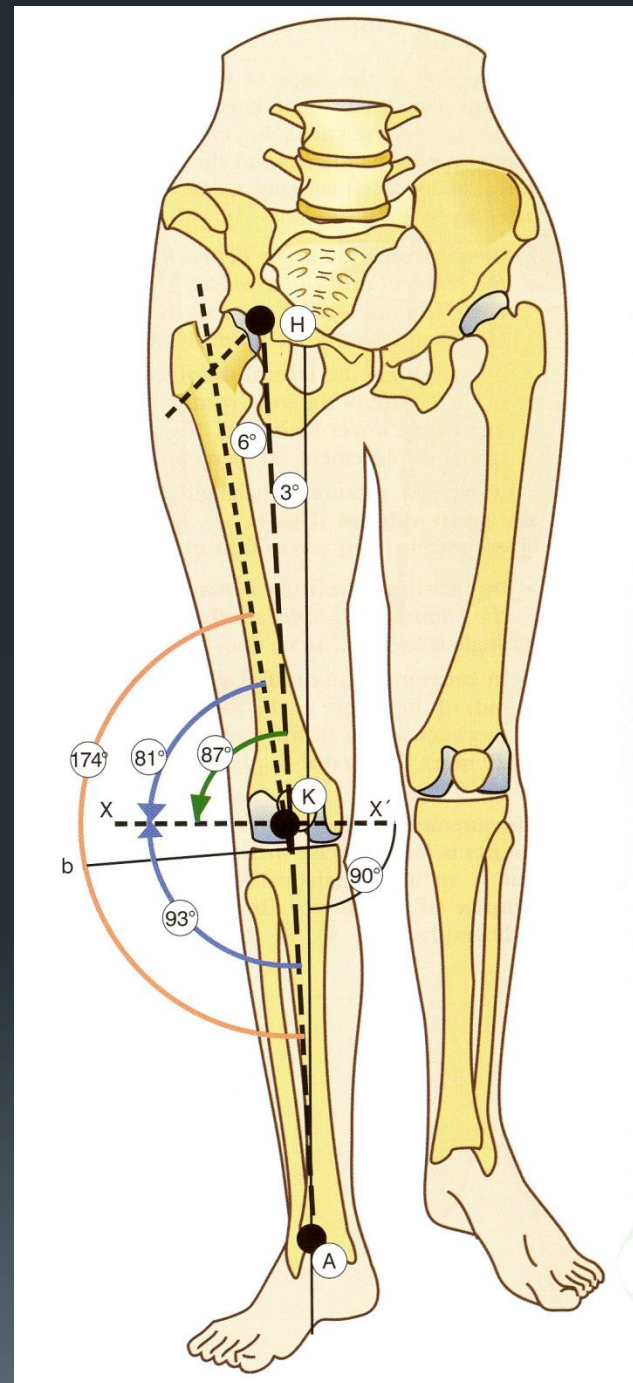
# Koleno

Kapanji, A., I. The physiology of the joints. Vol. 2: The lower limb. Churchill Livingstone Elsevier 2011, 6. vyd., 323 s. ISBN 978-0-7020-3942-3.



# Kolenní kloub

- typ kloubu
- fyziologická valgozita
- mechanická osa pohybu



# Genu valgum / genu varum

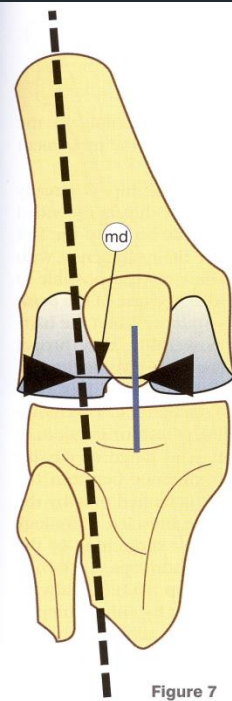


Figure 7

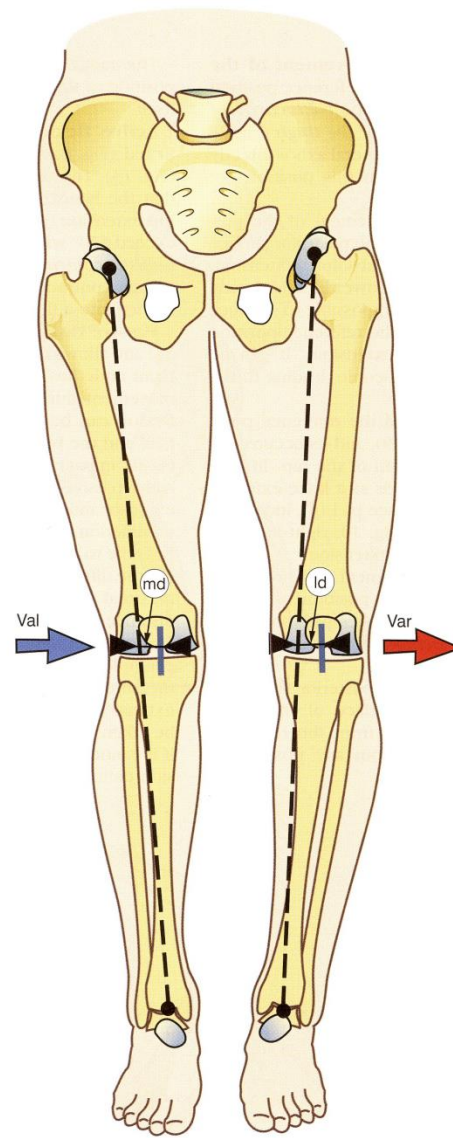


Figure 4

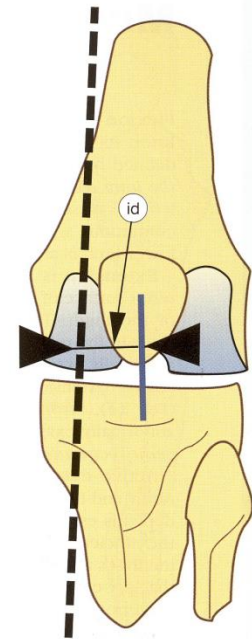
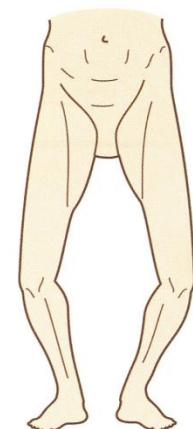
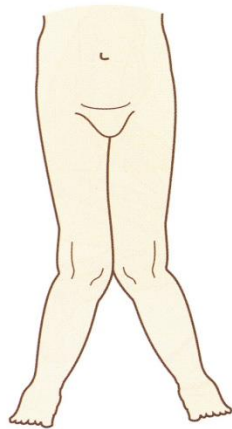


Figure 5



# ROZSAH POHYBU

FLEXE

EXTENZE

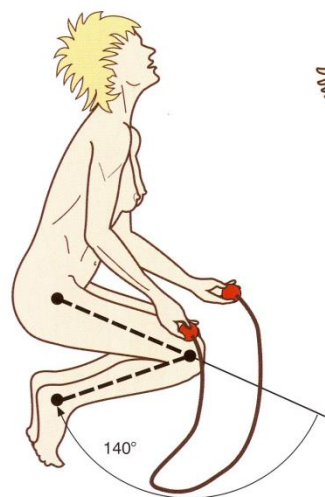
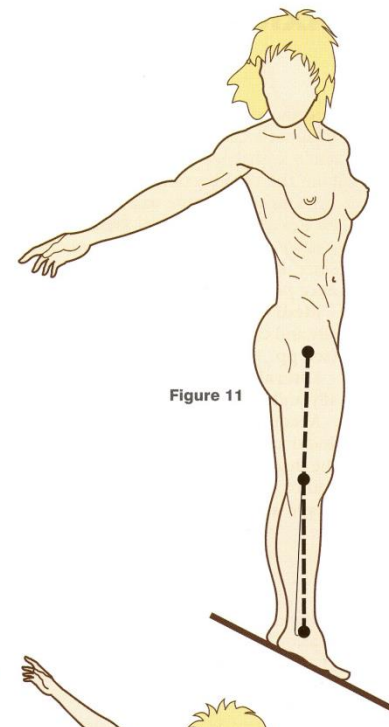
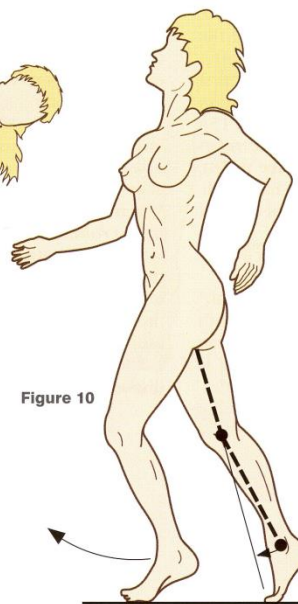
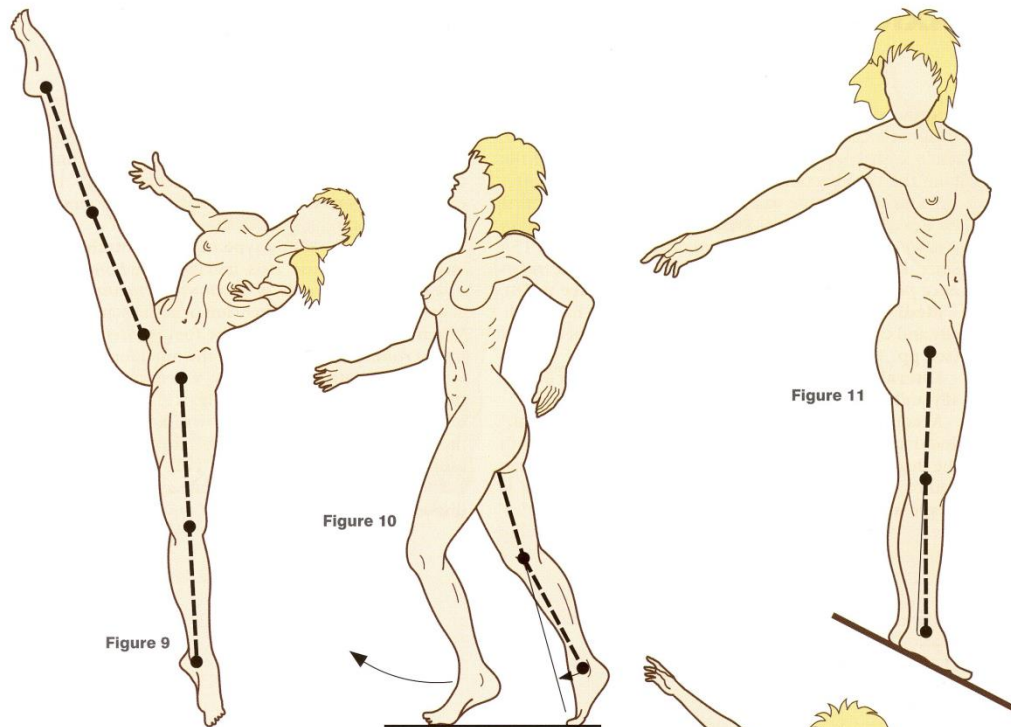


Figure 12

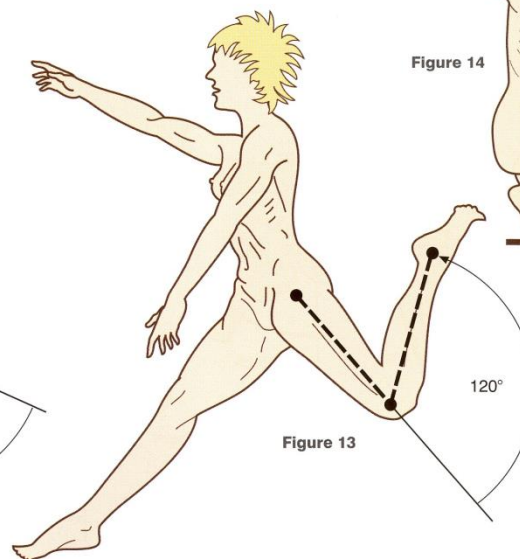


Figure 13

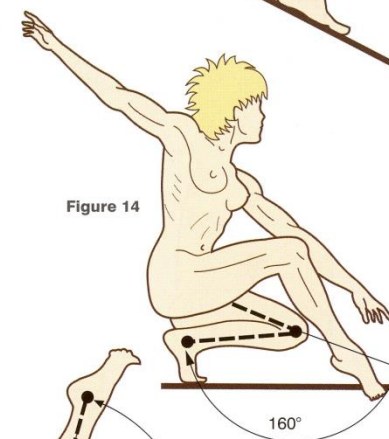
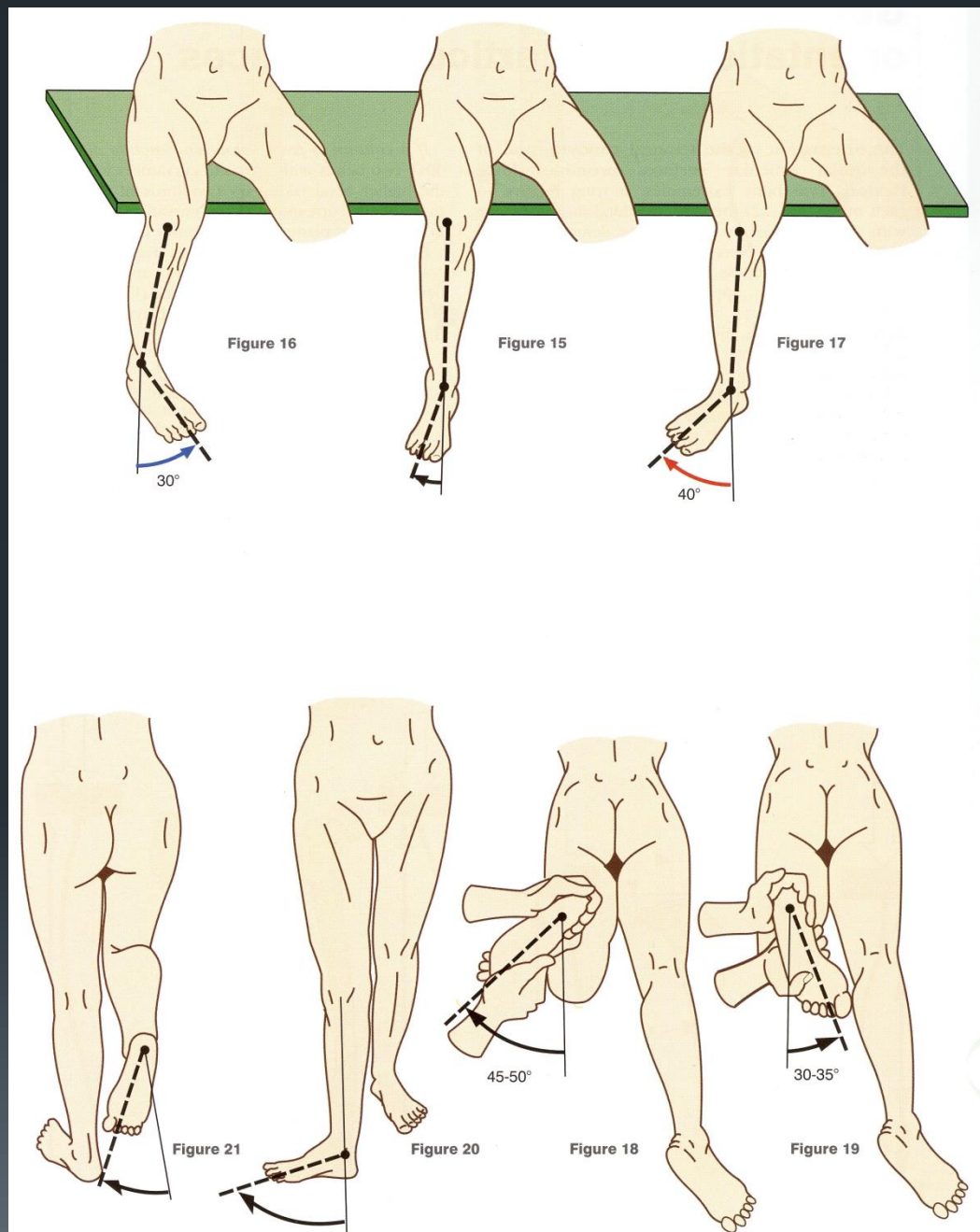


Figure 14

# ROZSAH POHYBU

## ROTACE

automatická rotace  
během flexe/extenze  
kolene



# TVAR KLOUBNÍCH PLOCH



Figure 22

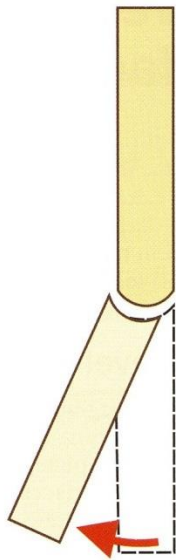


Figure 23

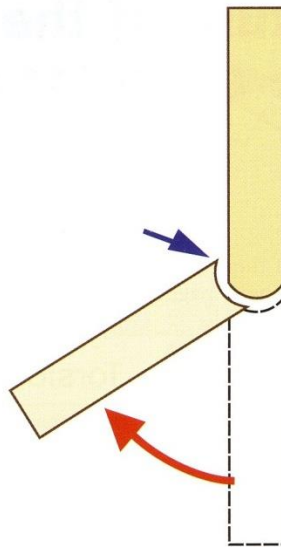


Figure 24

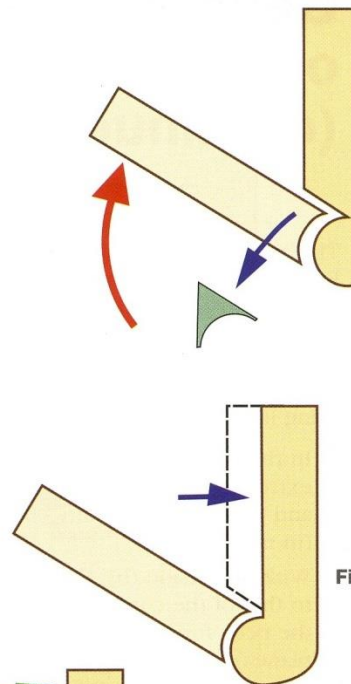


Figure 25

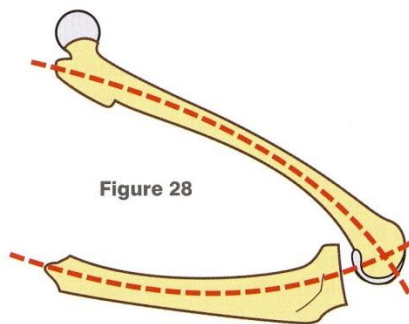


Figure 28

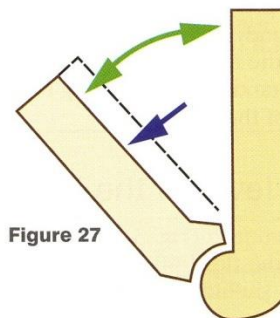


Figure 27

# TVAR DIAFÝZY

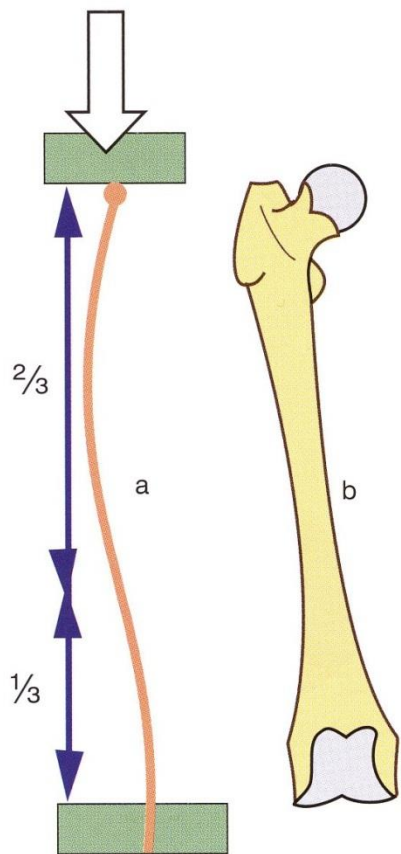


Figure 30

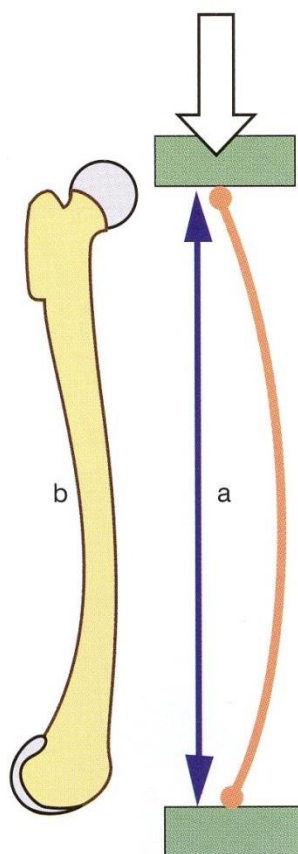


Figure 29

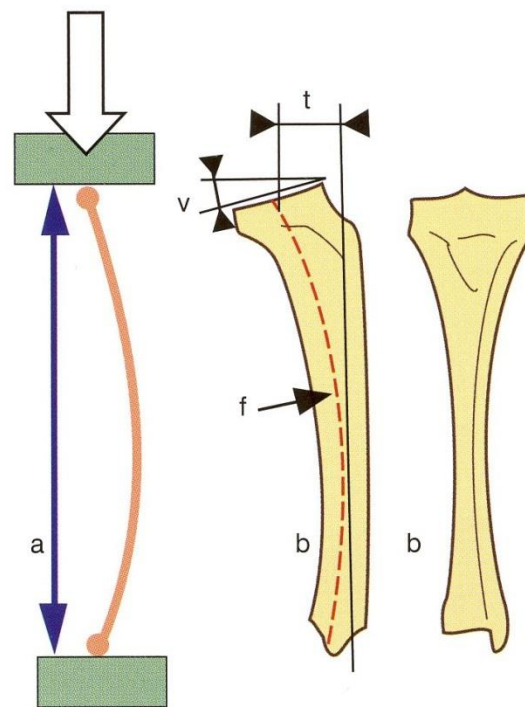


Figure 32

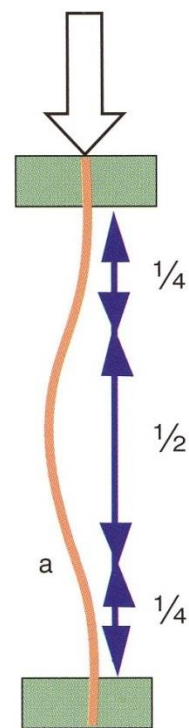


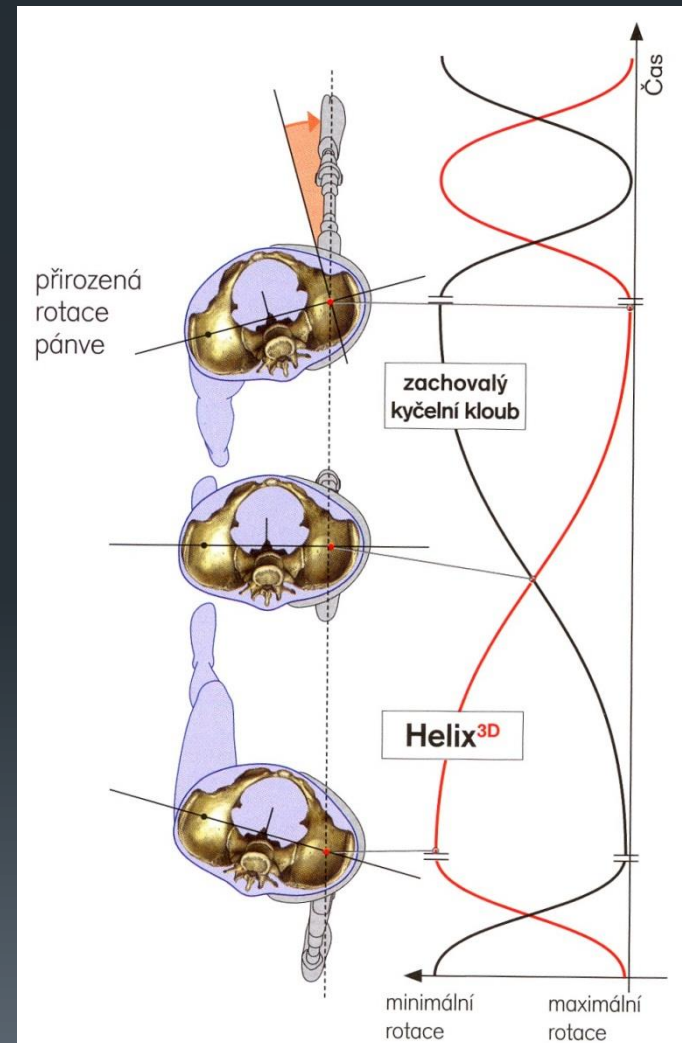
Figure 31



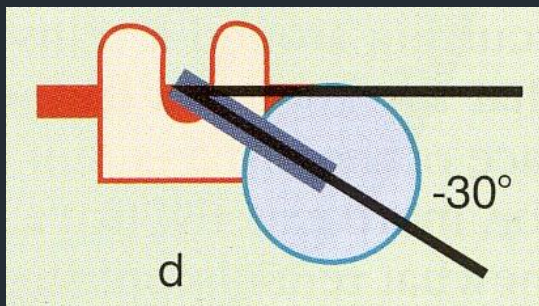
# ROTAČNÍ NASTAVENÍ KL. PLOCH

## ■ ROTACE PÁNVE

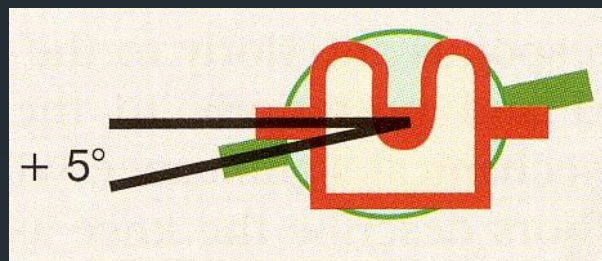
při chůzi (forward swing) +  
30°



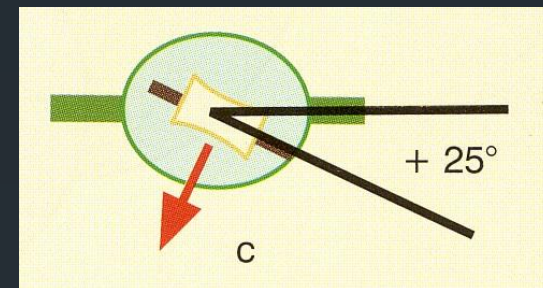
# R. NASTAVENÍ VE STOJI



ÚHEL KRČKU  
FEM. S AP  
OSOU  $-30^\circ$



R. KOLENE PŘI  
PLNÉ EXT.  
 $-5^\circ$



TORZE TIBIE  
 $-25^\circ$

TORZE FEMURU  
 $+30^\circ$



ZEVNÍ ROTACE CHODIDLA VE STOJI  
 $-30^\circ$

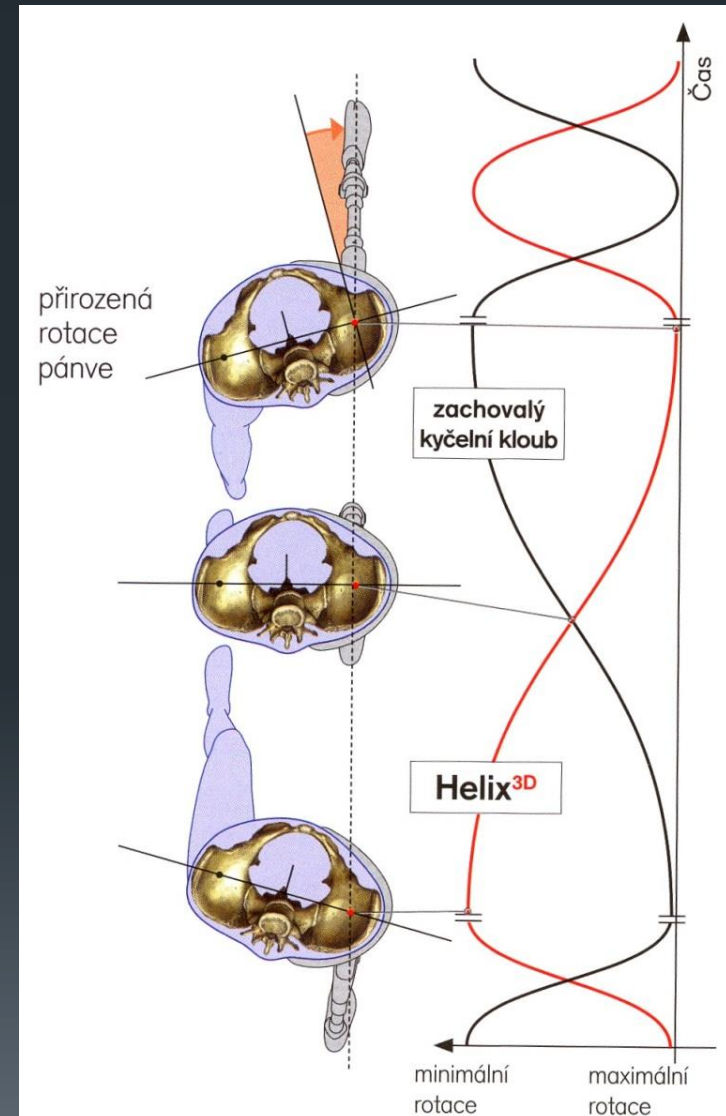
# ROTAČNÍ NASTAVENÍ KL. PLOCH

ROTACE PÁNVE  
při chůzi (forward  
swing)

+ 30°

KOMPENZACE ZR  
CHODIDLA VE  
STOJI

- 30°



# FLEXE / EXTENZE

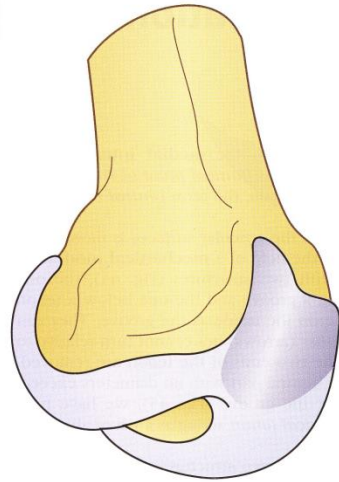


Figure 39

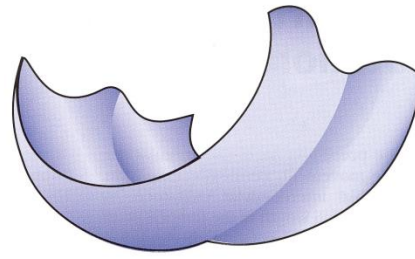


Figure 37



Figure 38

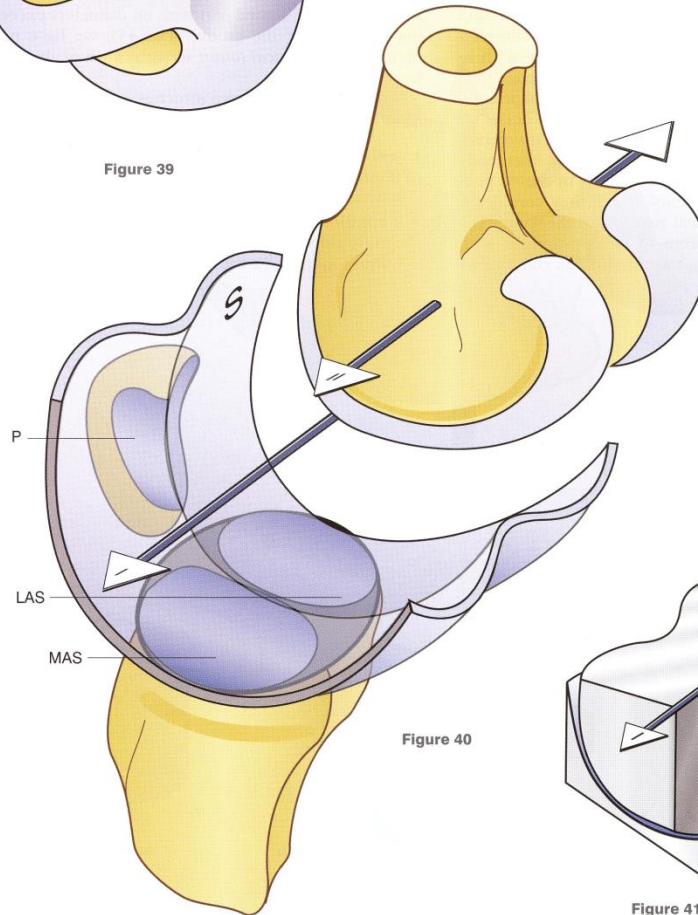


Figure 40

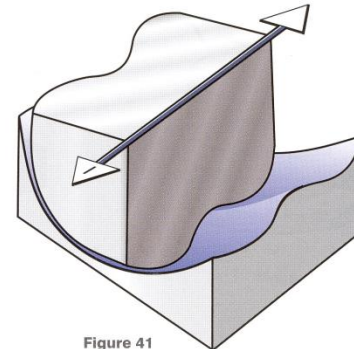


Figure 41

# AXIÁLNÍ ROTACE

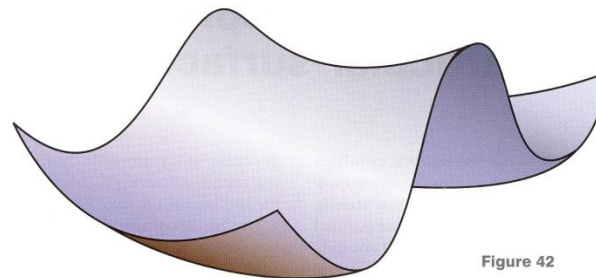


Figure 42

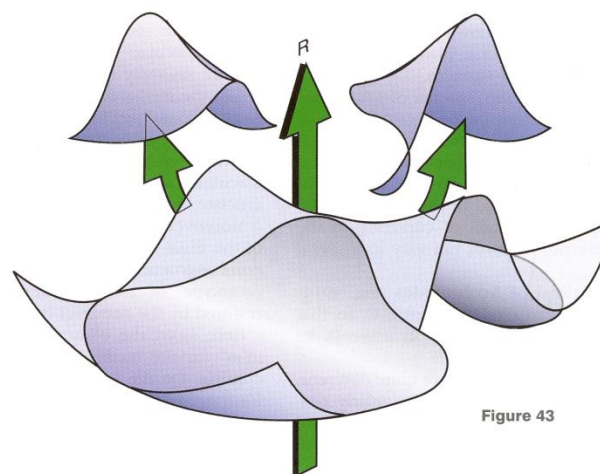


Figure 43

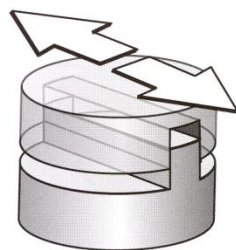


Figure 44

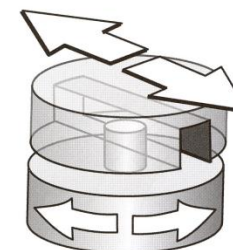
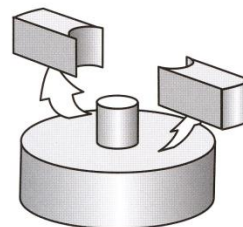


Figure 46

# FEMORÁLNI

## VS.

# TIBIÁLNI

# KONDYL

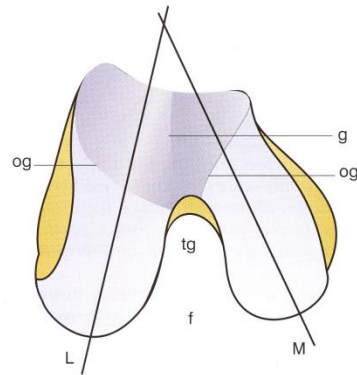


Figure 47

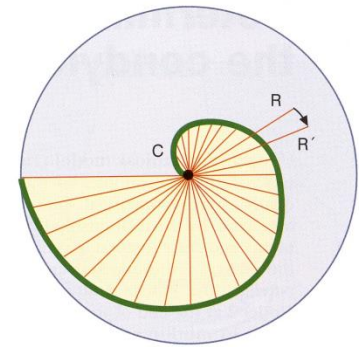


Figure 49

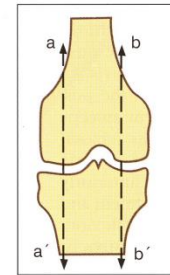


Figure 48

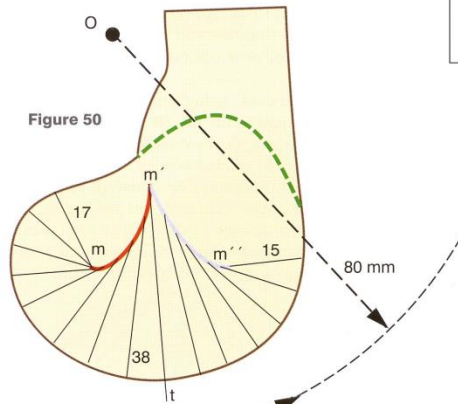


Figure 50

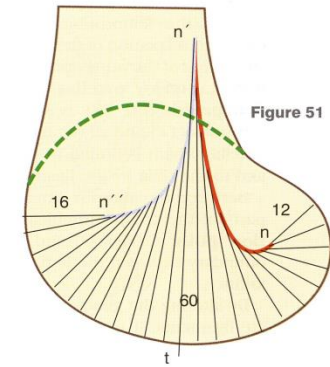


Figure 51

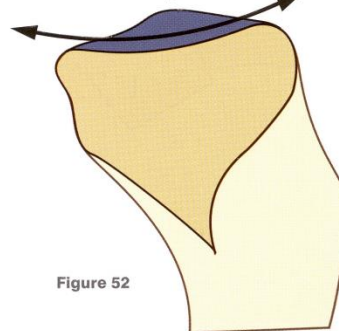


Figure 52

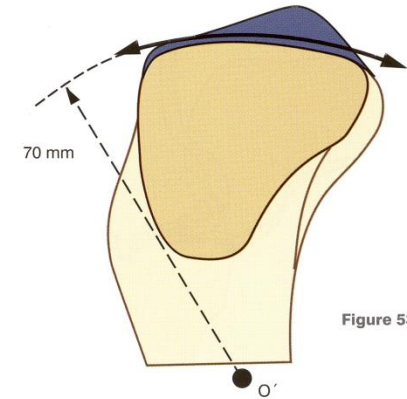
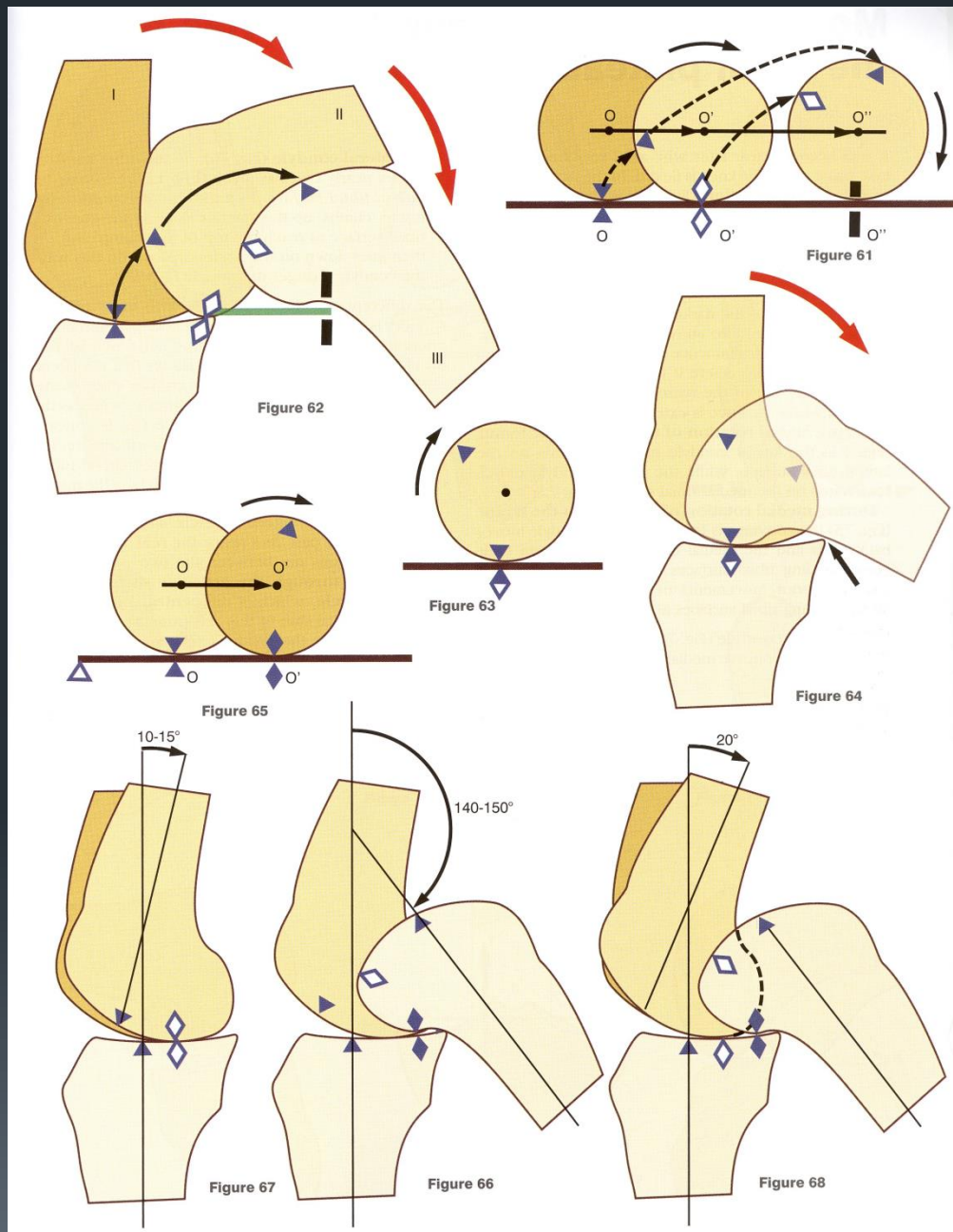


Figure 53

# POSUVNÝ VS. VALIVÝ POHYB V PRŮBĚHU FL / EXT



# POHYBY KONDYLŮ V PRŮBĚHU AXIÁLNÍ ROTACE



Figure 71



Figure 69



Figure 73

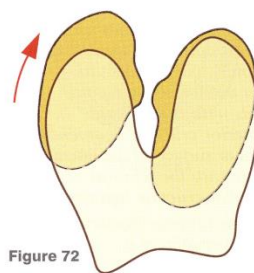


Figure 72



Figure 70

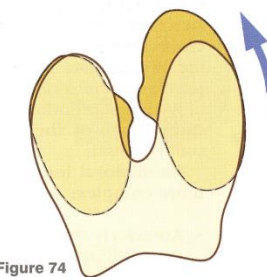


Figure 74

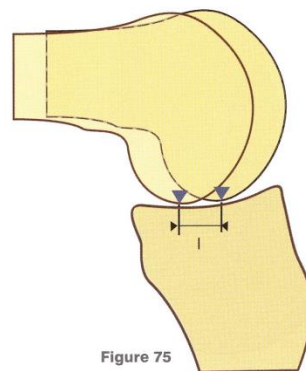


Figure 75

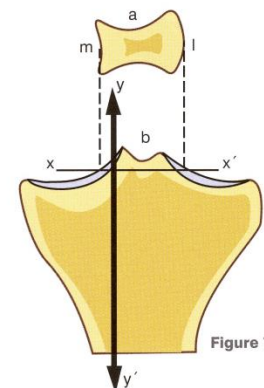


Figure 77

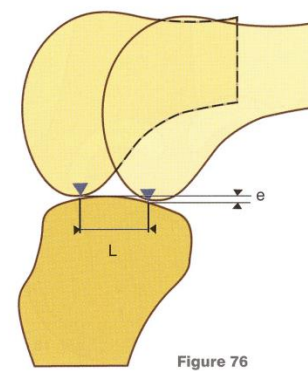
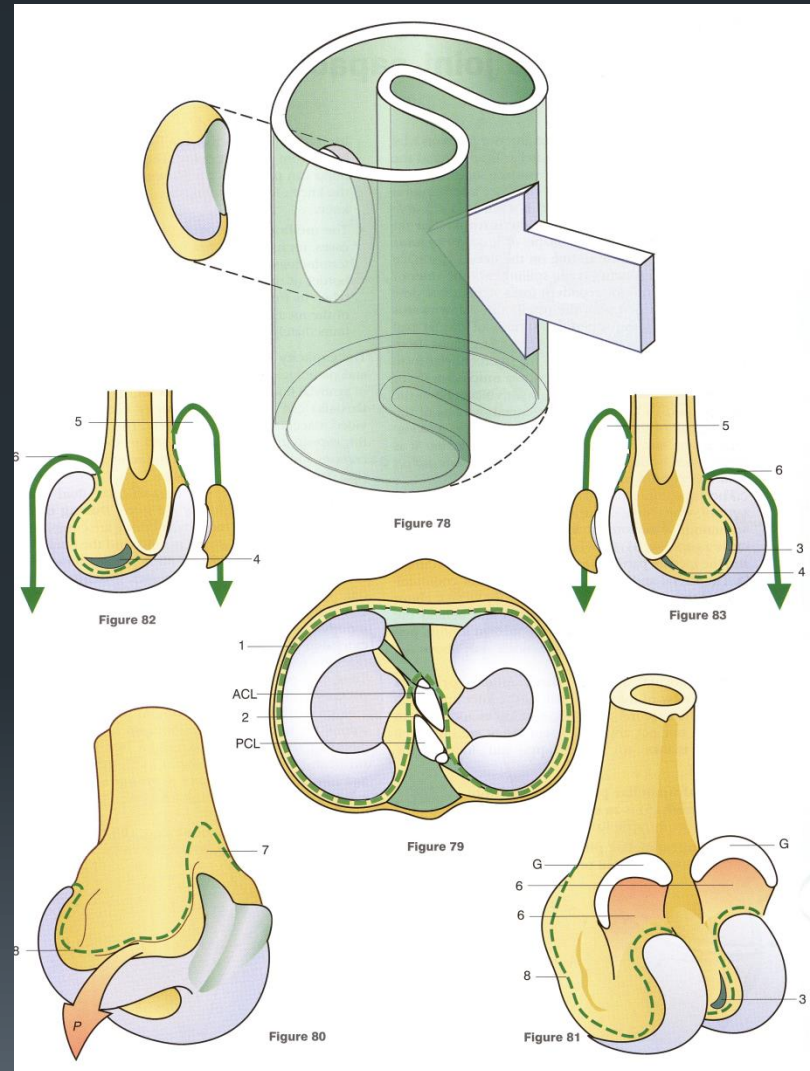


Figure 76



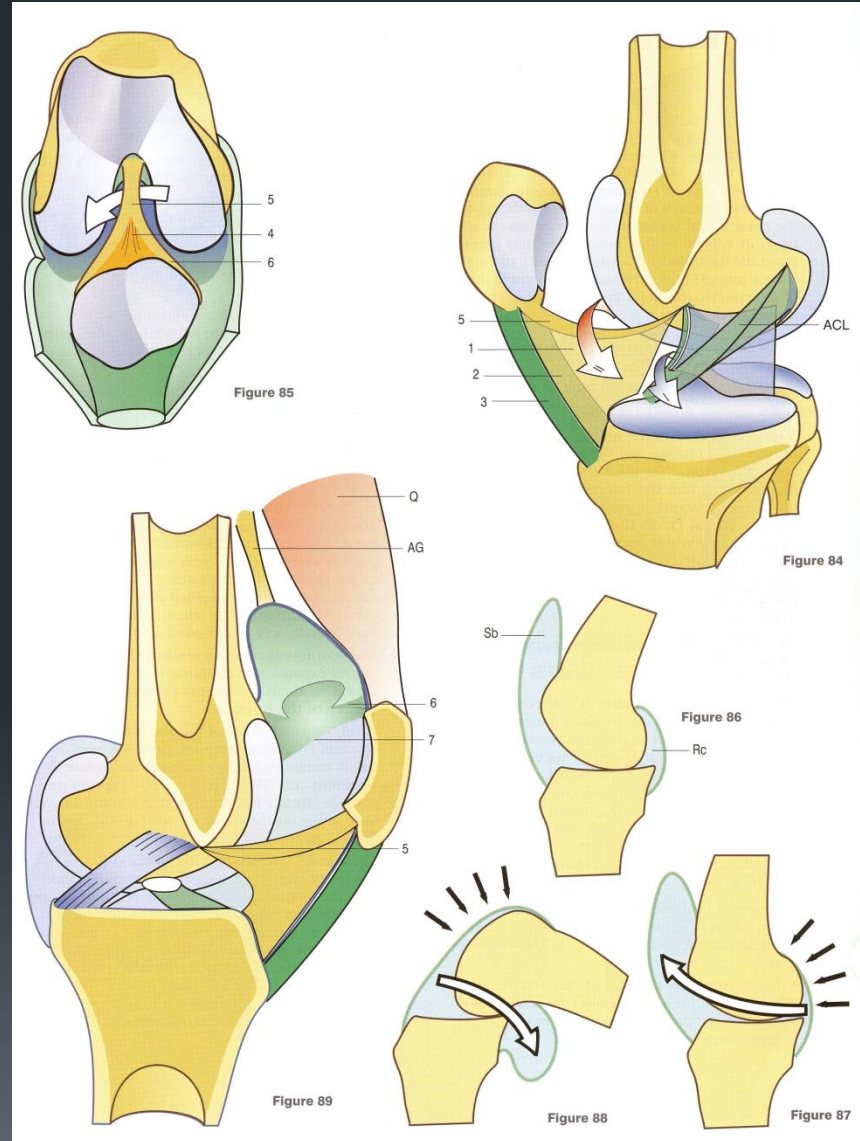
# KLOUBNÍ POUZDRO

- suprapatelární recesus
- parapatelární recesus
- kondylární část



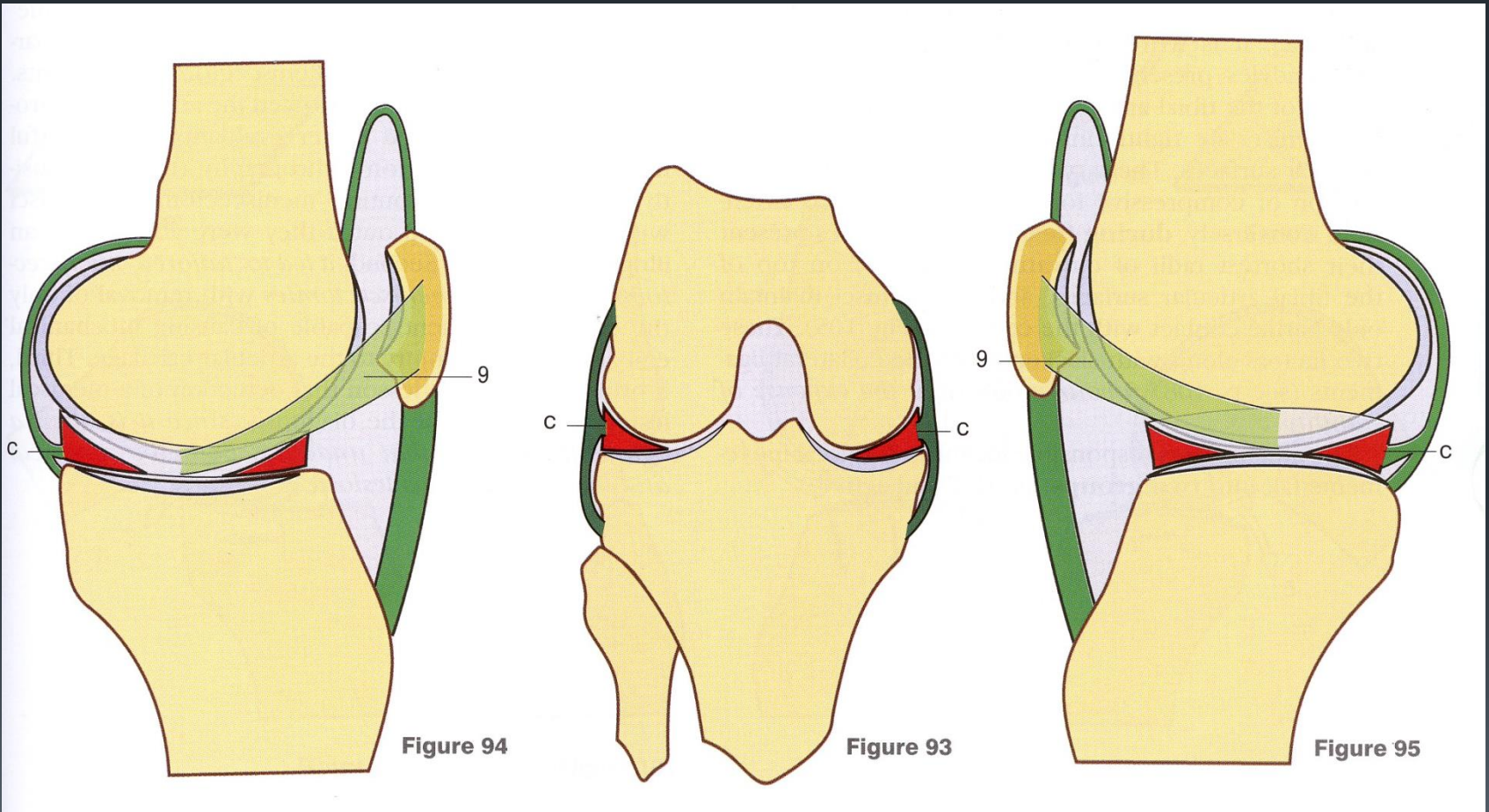
# KLOUBNÍ POUZDRO

- infrapatelární plica
- suprapatelární plica
- mediopatelární plica



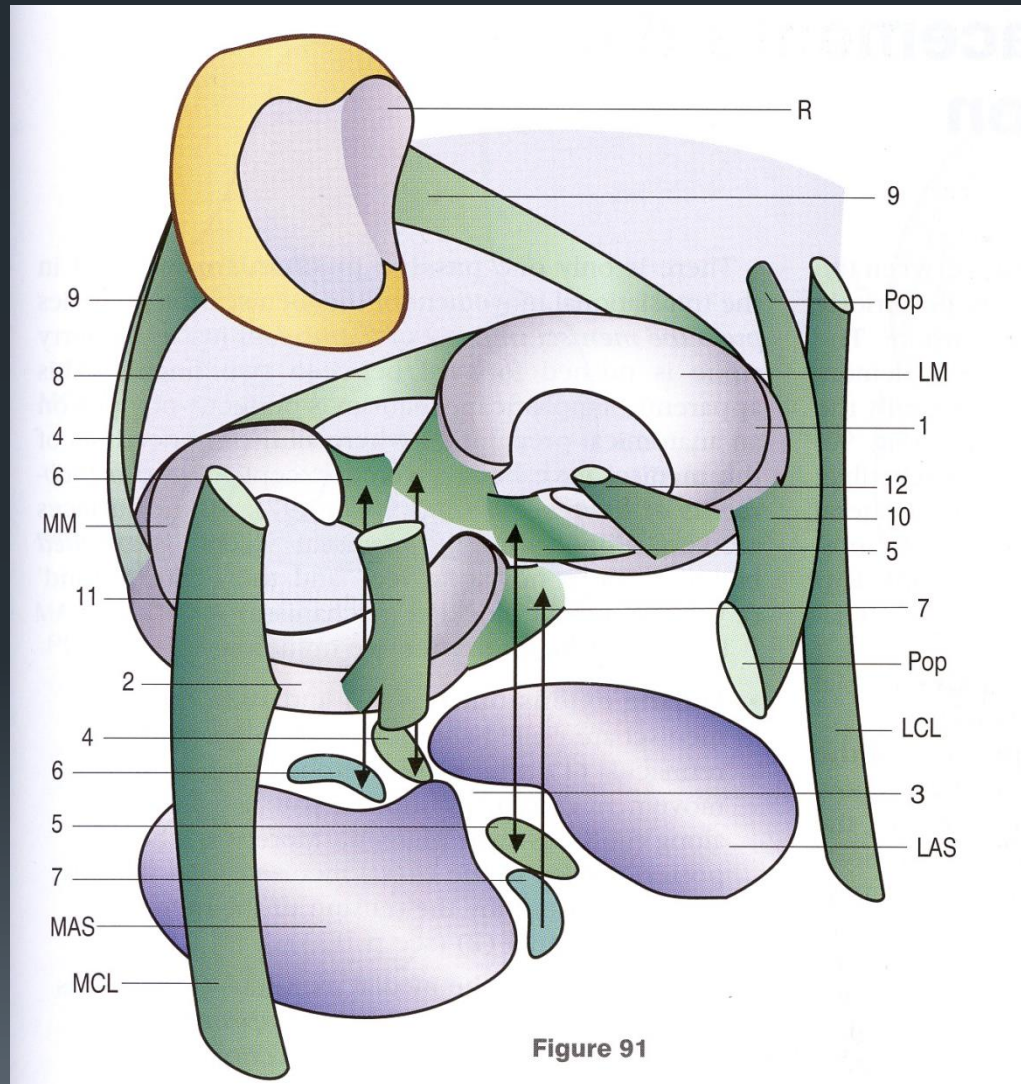
# MENISKY

## FUNKCE



# MENISKY

ÚPONY MENISKŮ,  
VZTAH KE SVALŮM



# POHYBY MENISKŮ

## FLEXE / EXTENZE

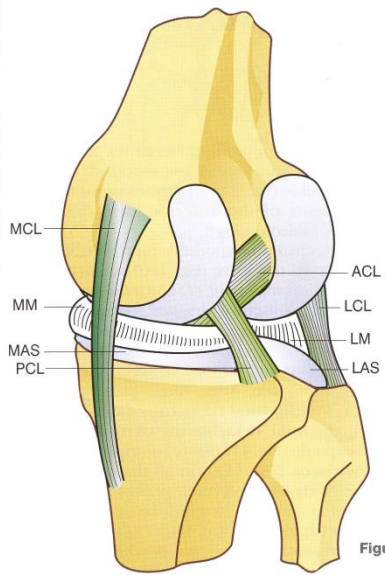


Figure 96

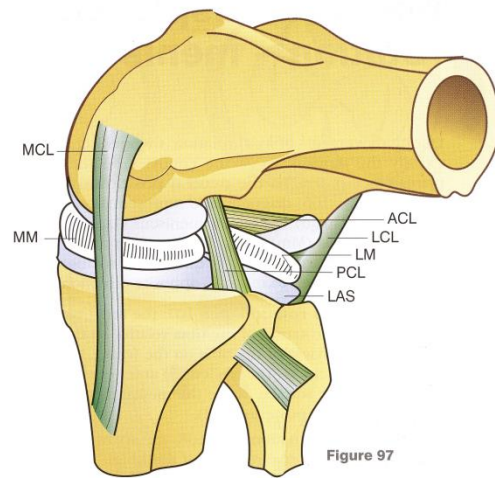


Figure 97

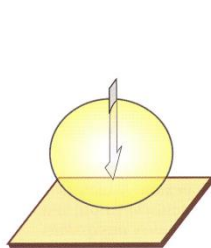


Figure 100

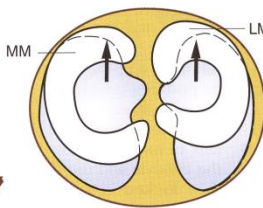


Figure 98

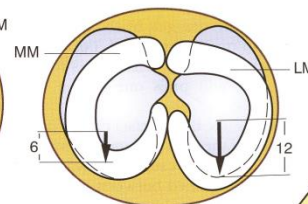


Figure 99

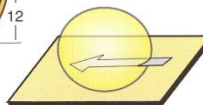


Figure 103

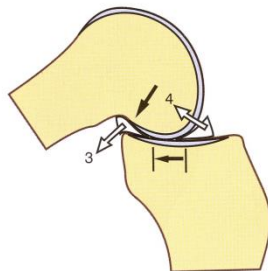


Figure 104

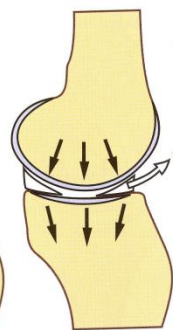


Figure 101

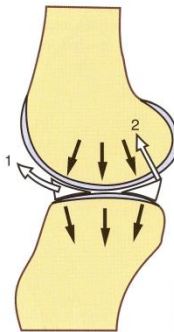


Figure 102

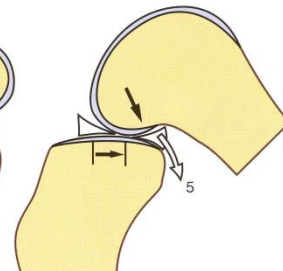


Figure 105

# POHYBY MENISKŮ

## AXIÁLNÍ ROTACE

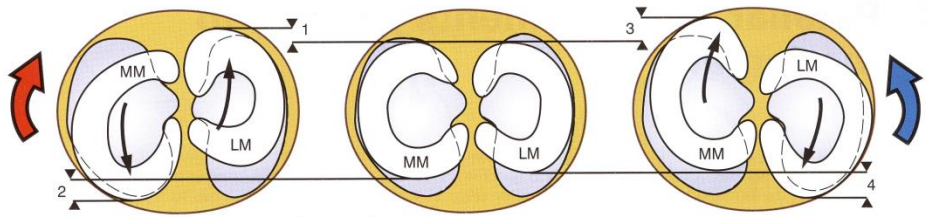


Figure 107

Figure 106

Figure 108

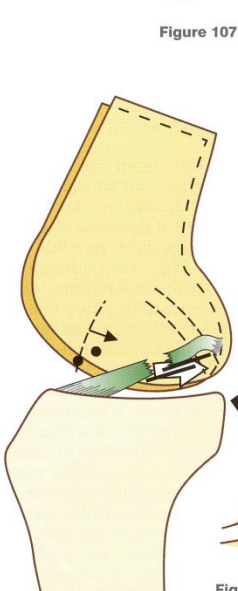


Figure 115

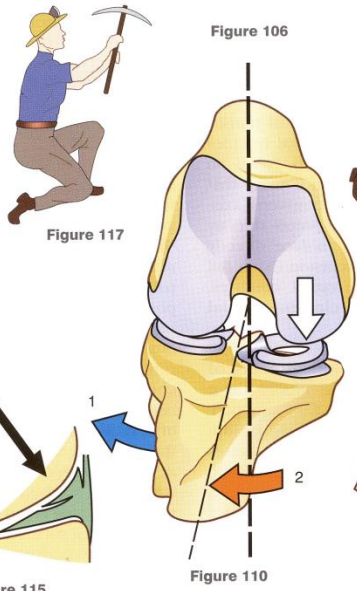


Figure 117

Figure 110

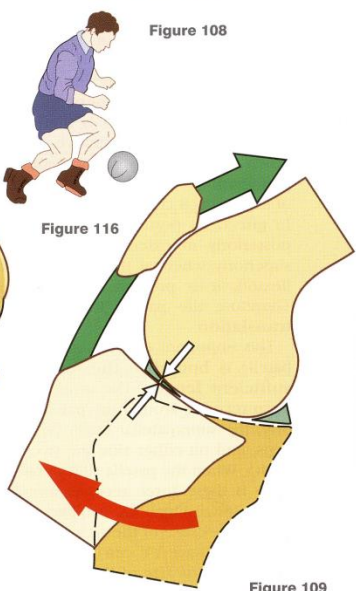


Figure 116

Figure 109



Figure 111



Figure 112

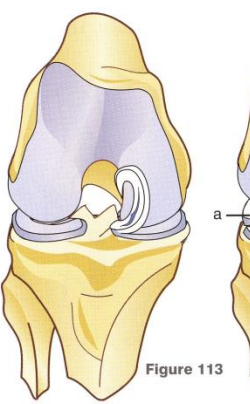


Figure 113

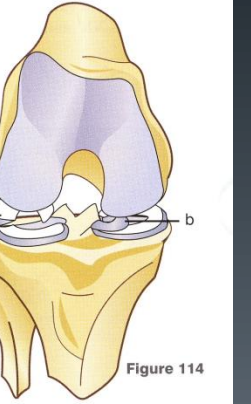


Figure 114

# POHYBY PATELY

## LATERÁLNÍ DEVIACE, SUPRAPATELÁRNÍ BURZA

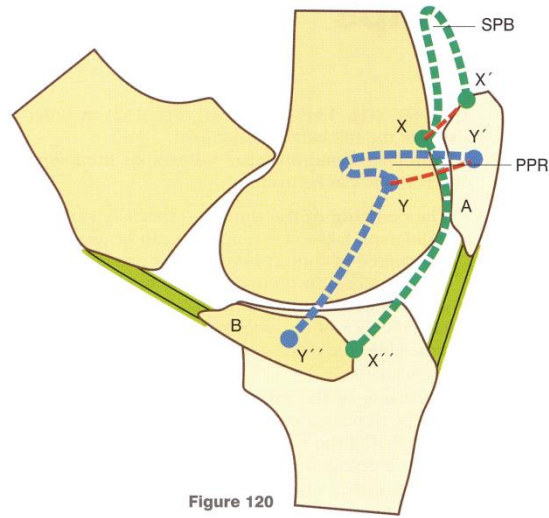


Figure 120

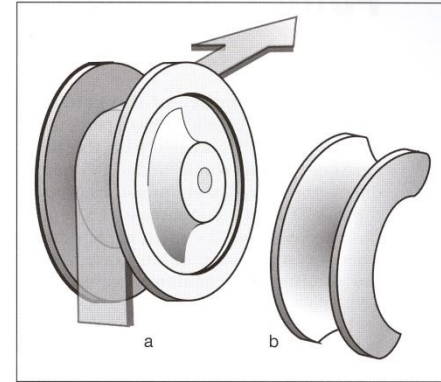


Figure 118

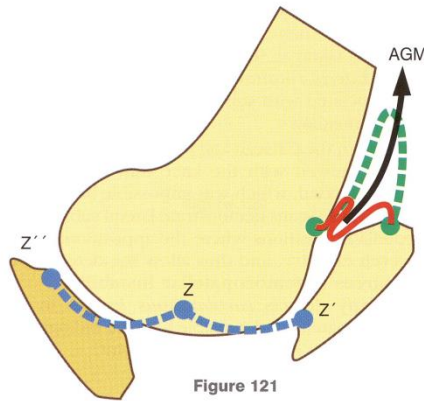


Figure 121

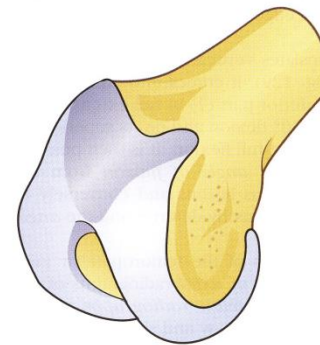


Figure 119

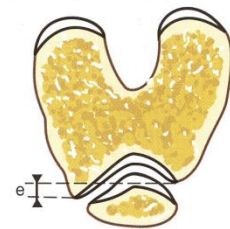
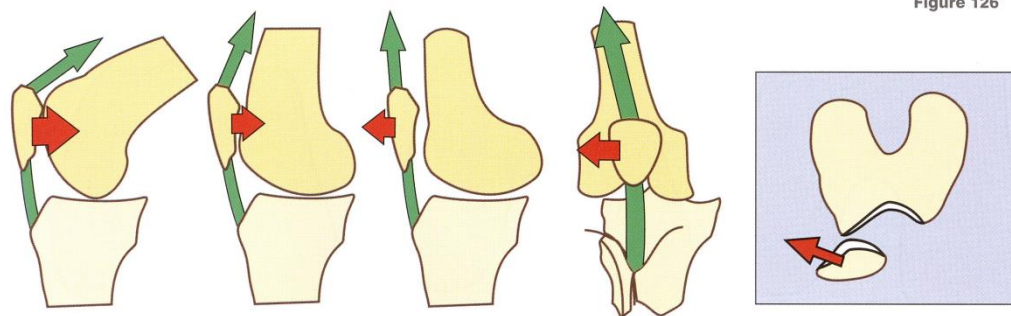


Figure 126



# VZTAH FEMUR - PATELA

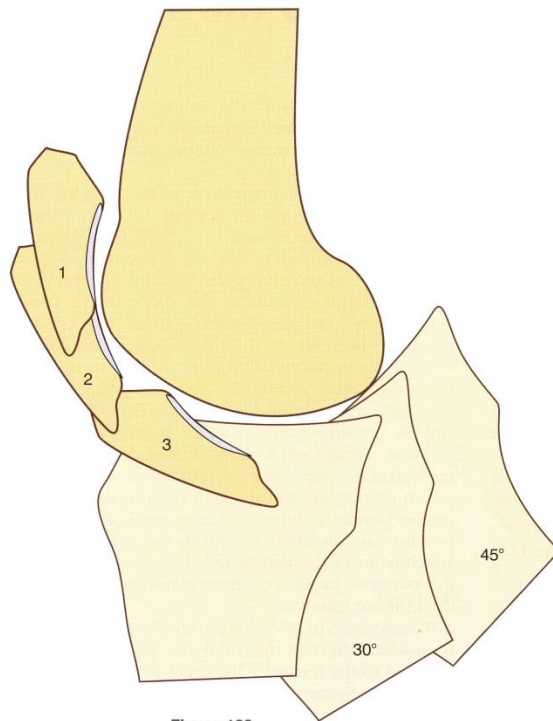


Figure 129

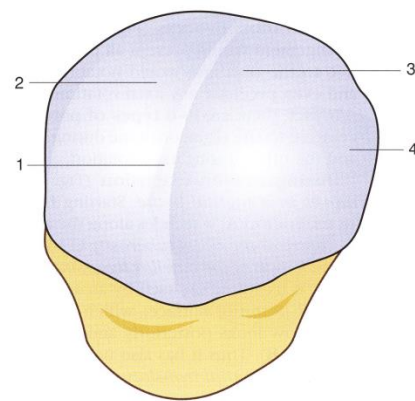
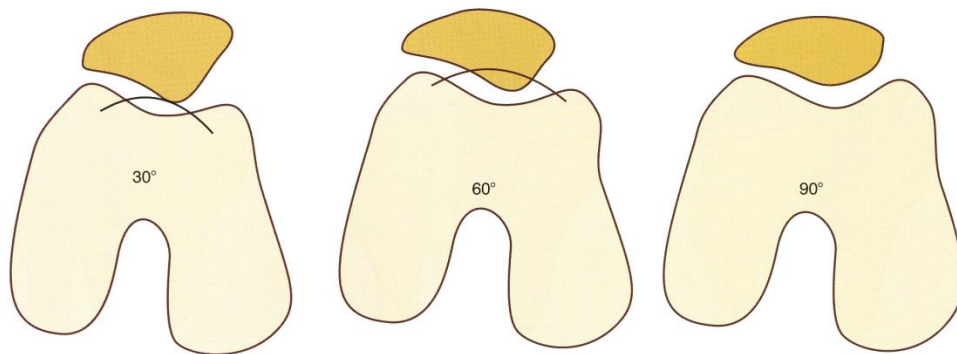


Figure 128





# Q - úhel

- Úhel mezi vektorem působení síly quadricepsu a jeho úponu
- Norma:
  - muži 10-12°
  - ženy 15-18°  
(širší pánev/kratší femur)



ROTACE TIBIE



ZMĚNA ÚHLU  
PATELLÁRNÍH  
O LIGAMENTA



SUBLUXACE  
PATELY



**PATELLÁRNÍ  
SYNDROMY**

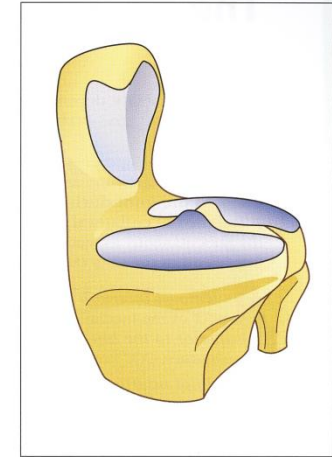
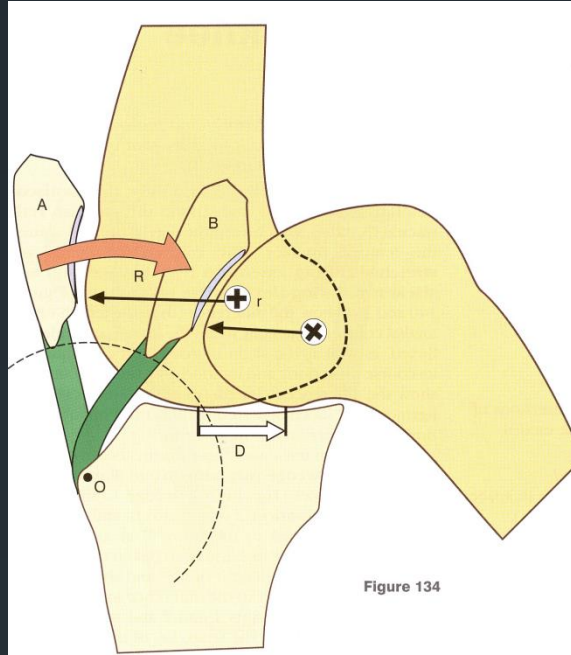
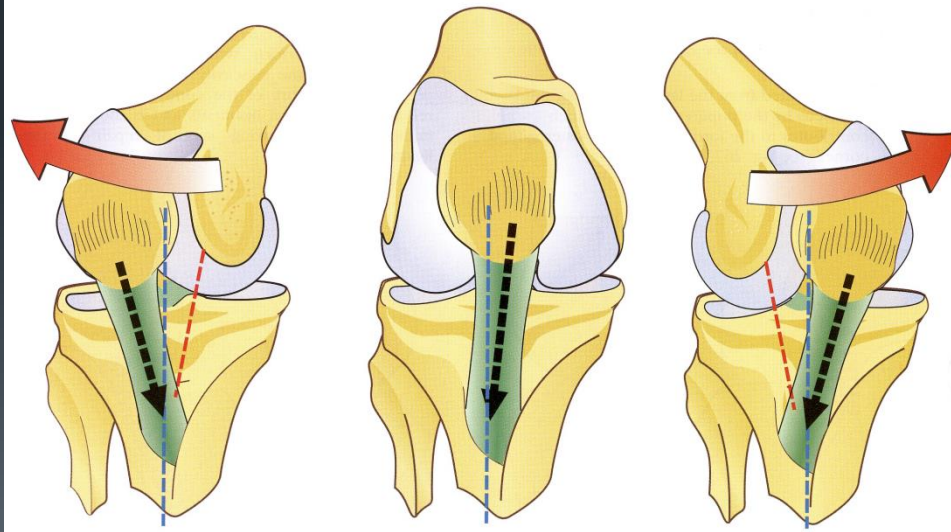


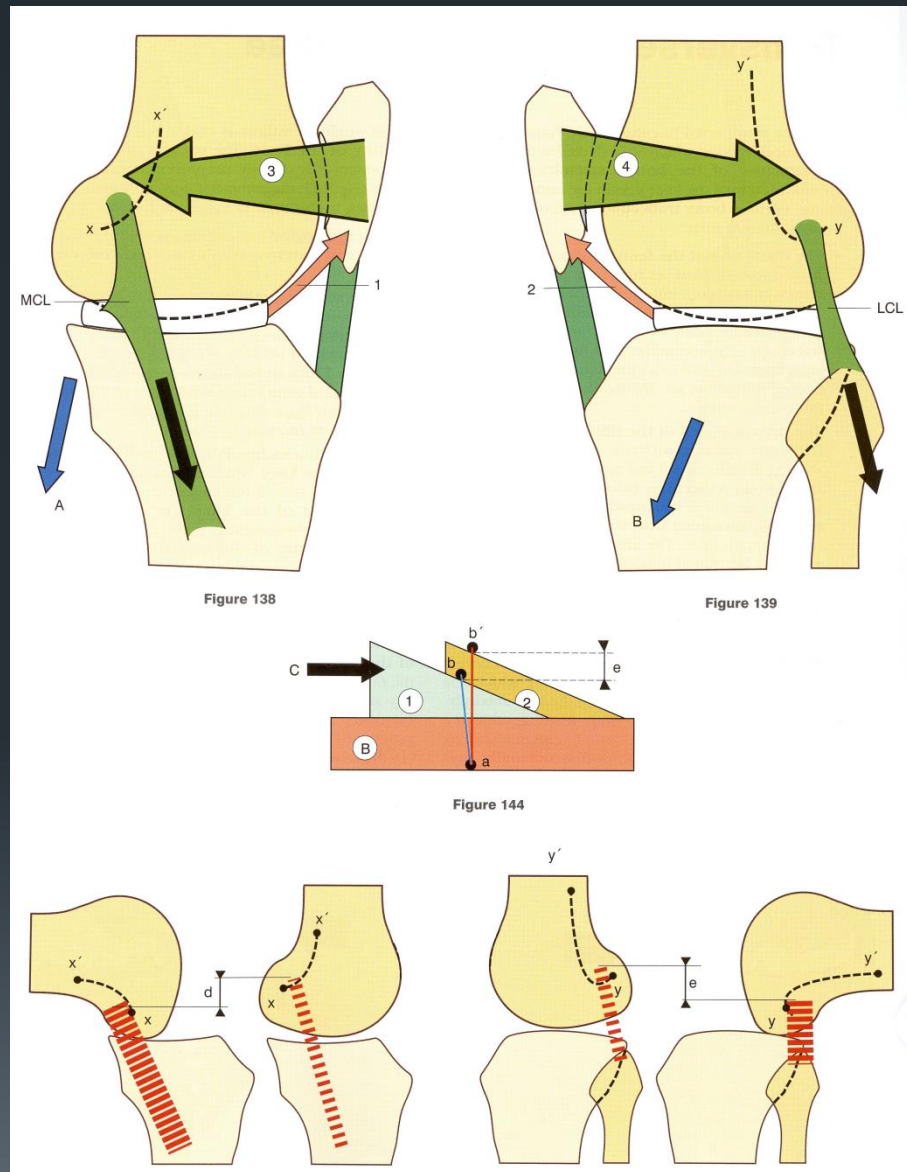
Figure 133



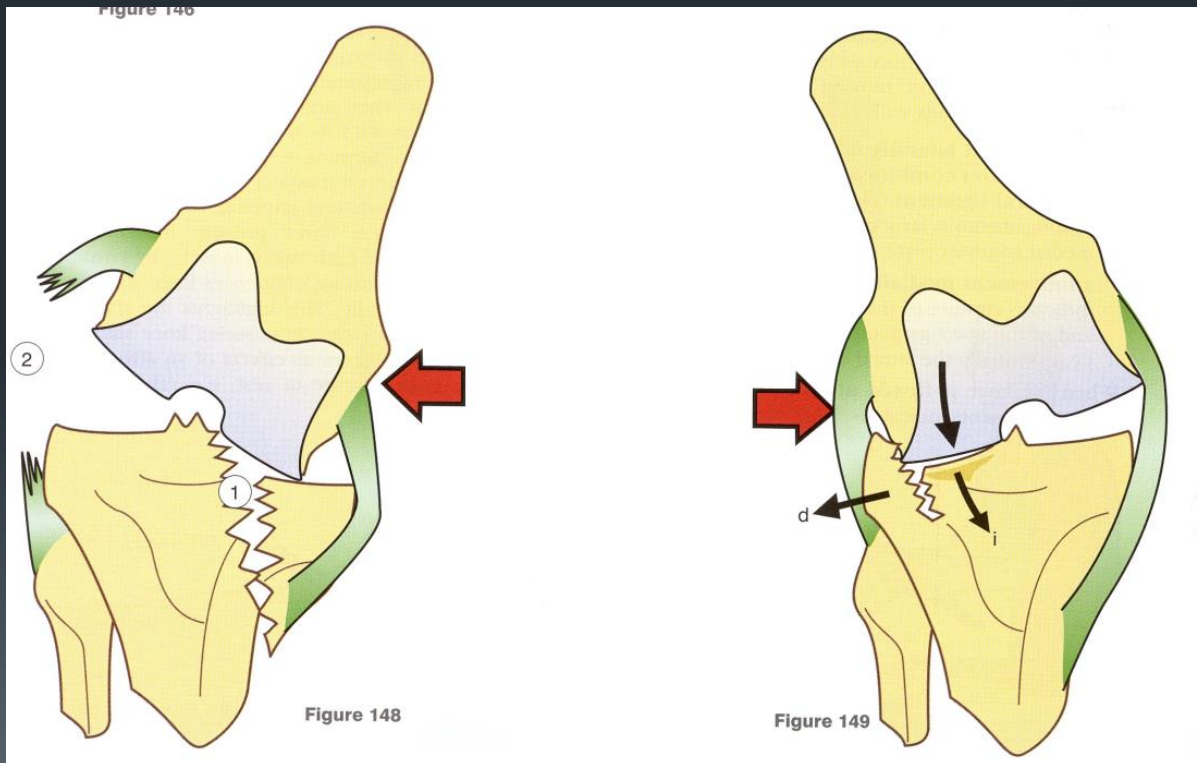
# KOLATERÁLNÍ LIGAMENTA

EXTENZE – FLEXE

NAPĚTÍ - UVOLNĚNÍ



# TRANSVERZÁLNÍ STABILITA KOLENE



# TRANSVERZÁLNÍ STABILITA KOLENE

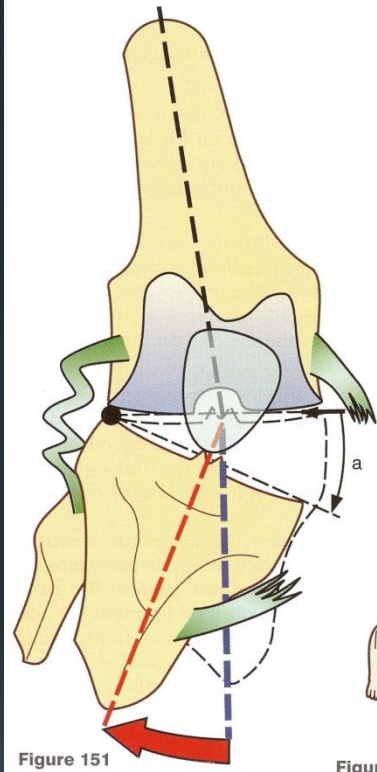


Figure 151

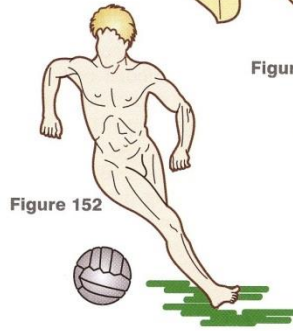


Figure 152

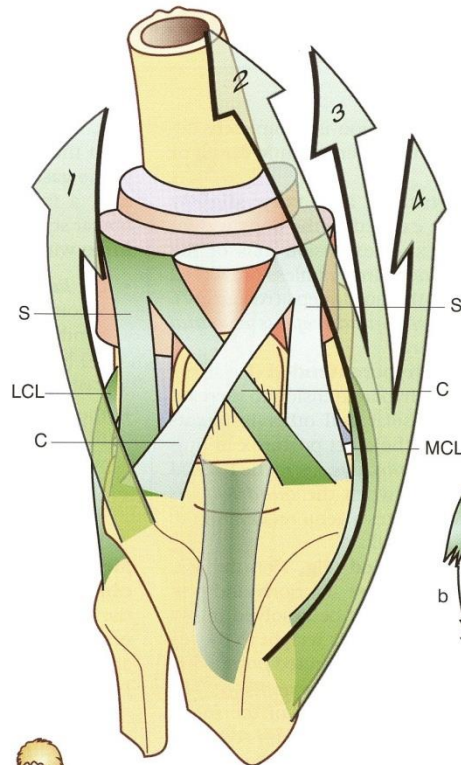


Figure 154



Figure 150

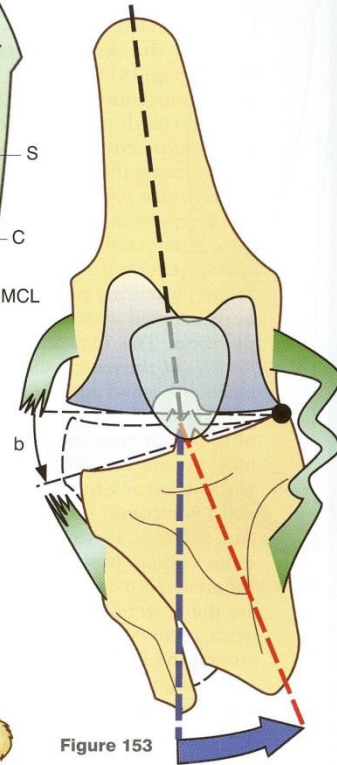
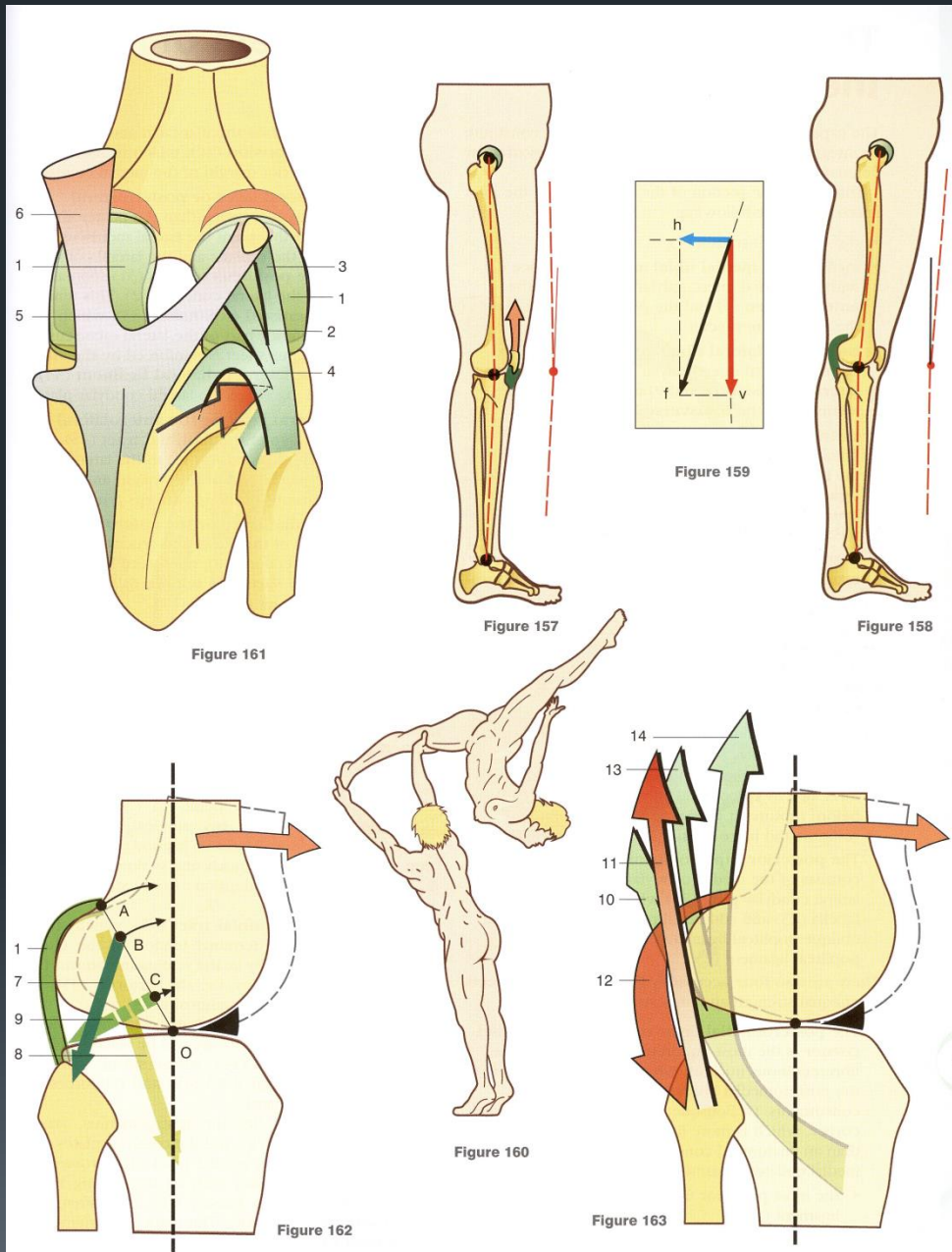


Figure 153

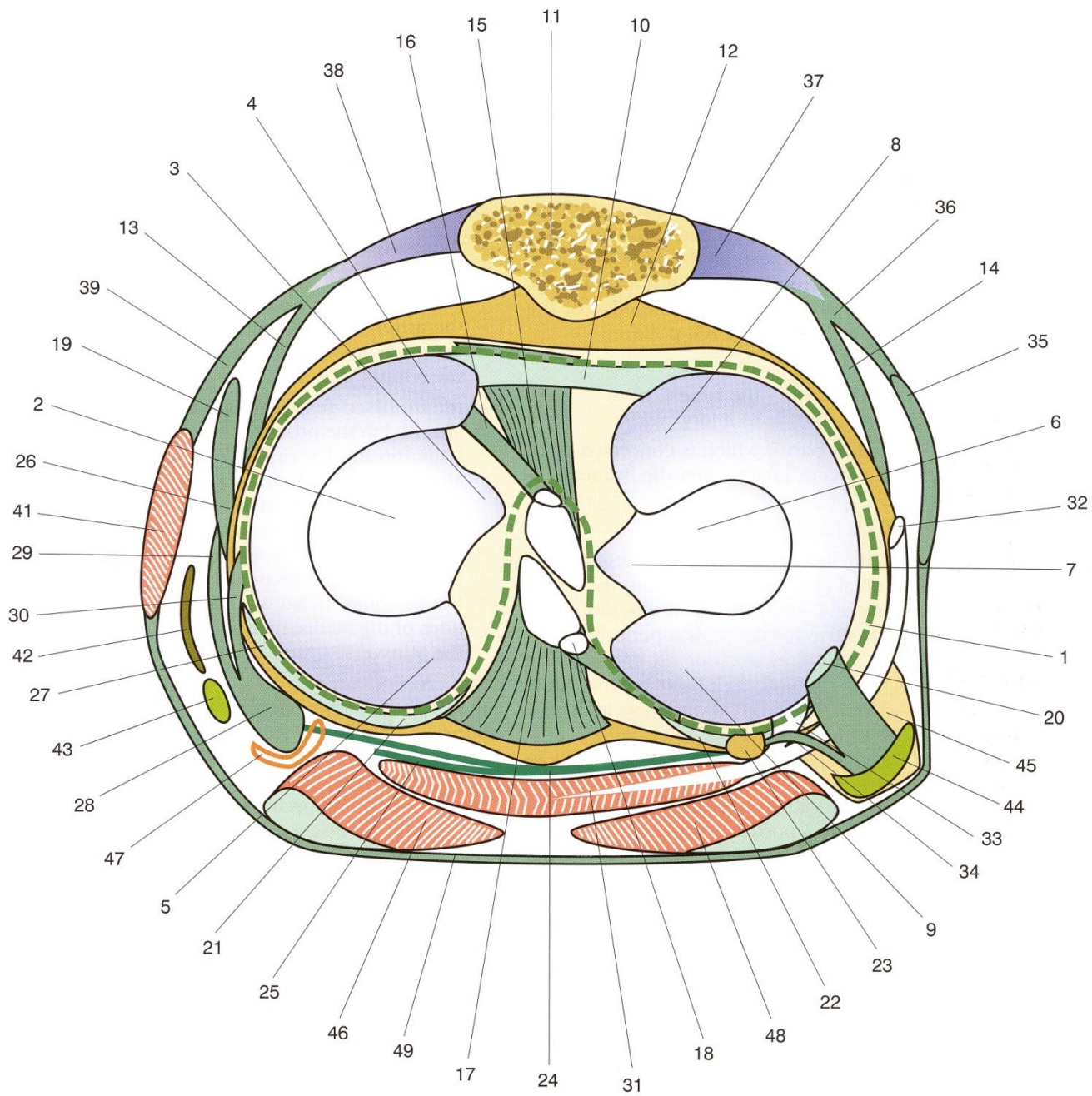
# ANTEROPOSTERIORNÍ STABILITA KOLENE



SVALOVÉ  
FAKTORY

LIGAMENTÓZNÍ  
FAKTORY

# PERIARTIKULÁRNÍ OCHRANNÝ SYSTÉM KOLENE



# ZKŘÍŽENÉ VAZY

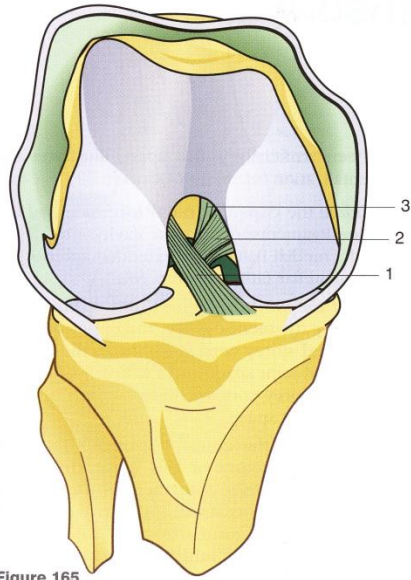


Figure 165

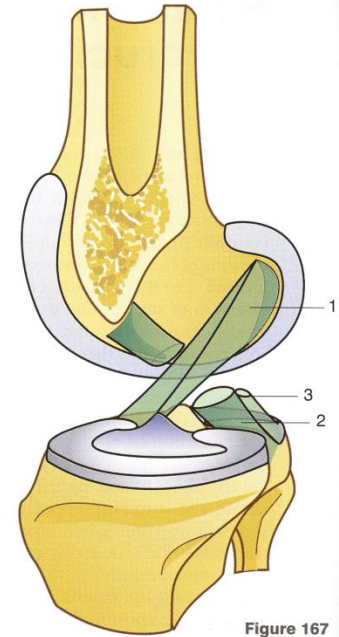


Figure 167

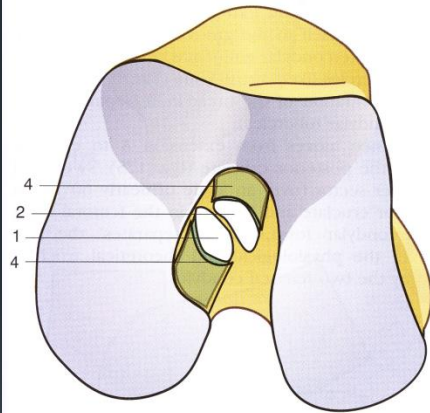


Figure 169

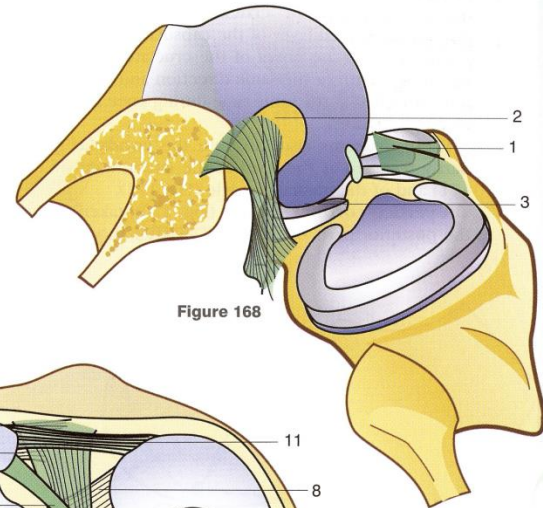


Figure 168

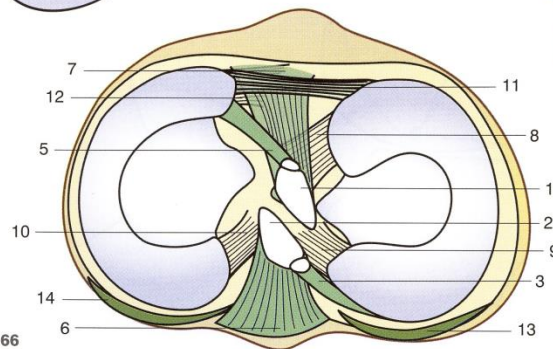


Figure 166



# ZKŘÍŽENÉ VAZY

AP stabilita kolene  
ve FL / EXT

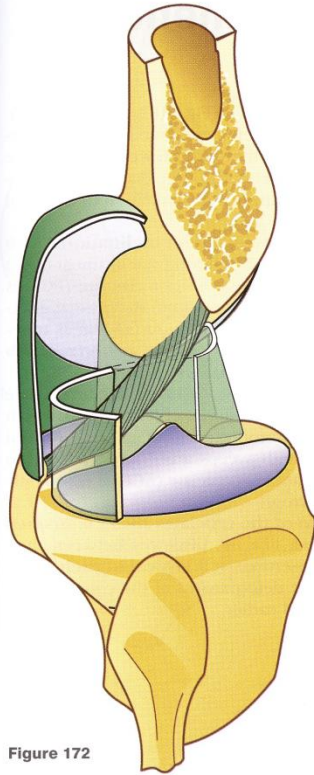


Figure 172

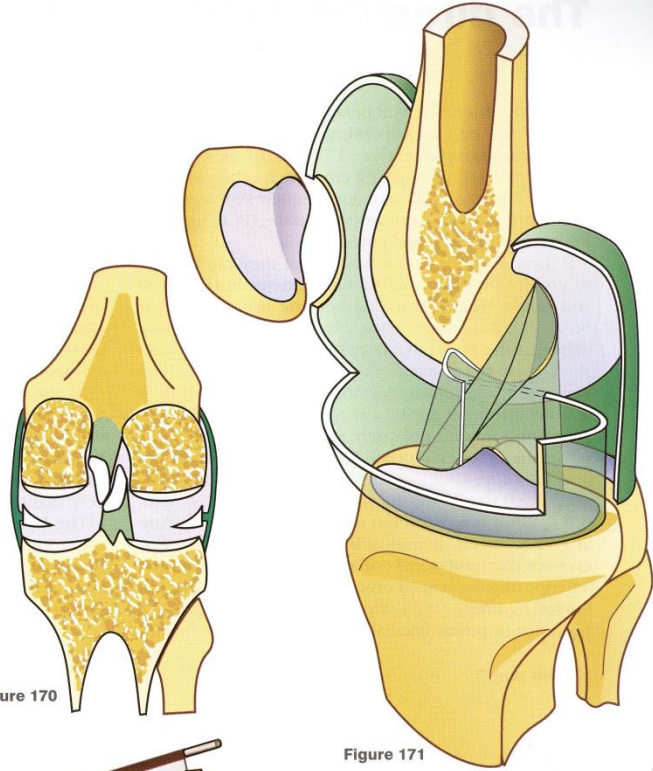


Figure 171

Figure 170

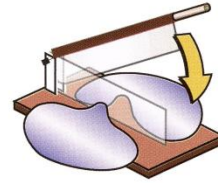


Figure 174

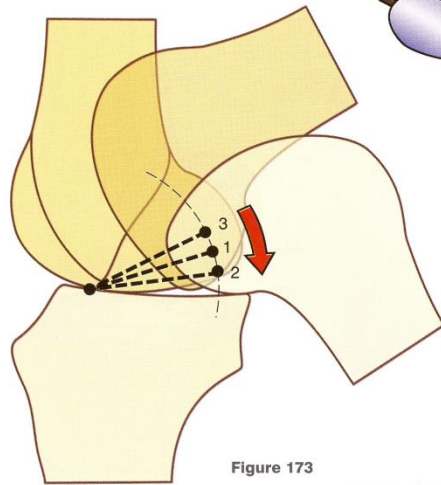


Figure 173

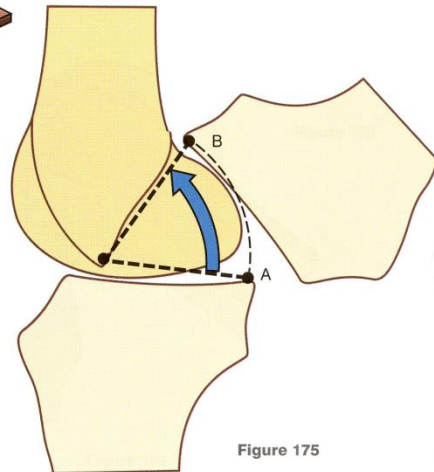
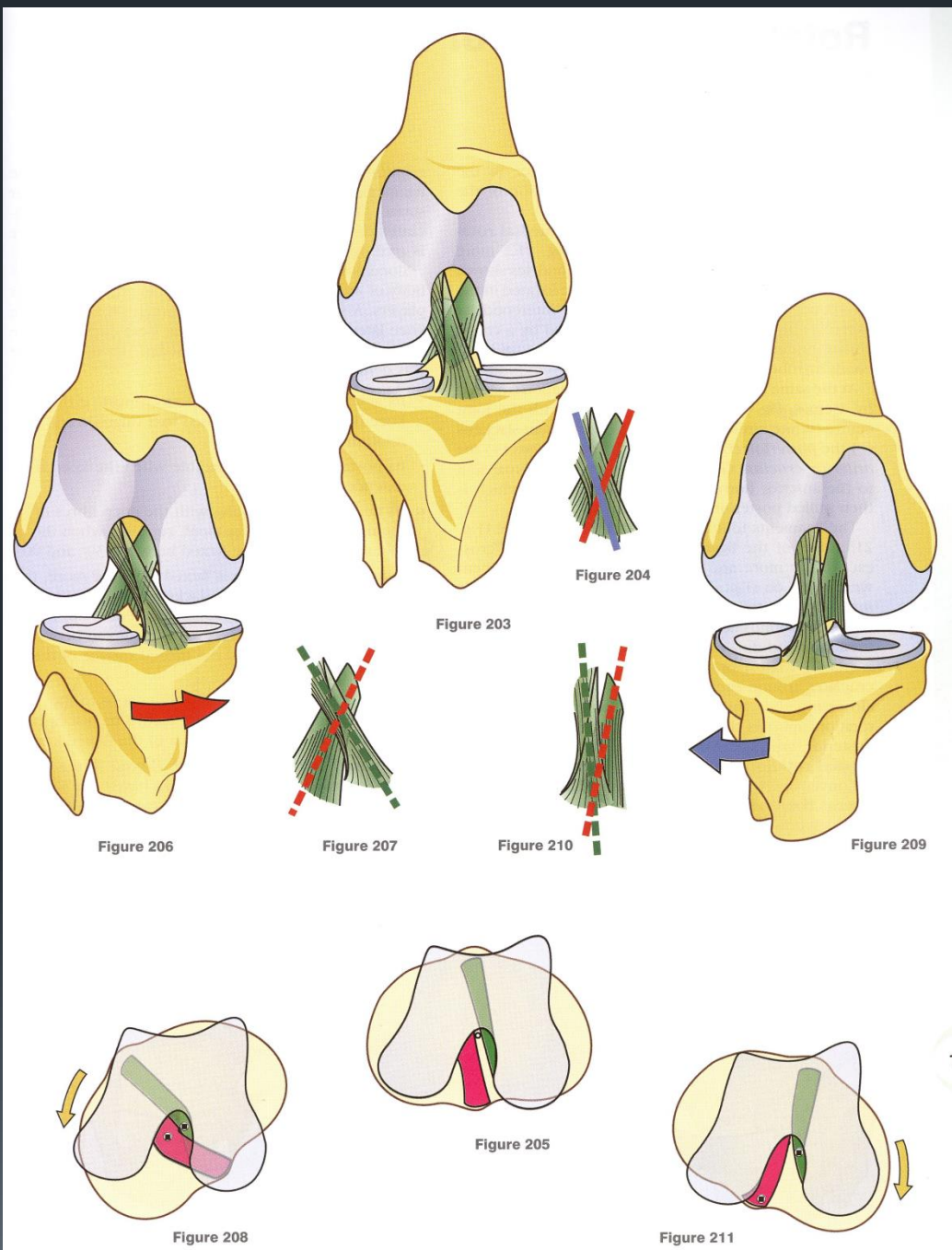


Figure 175

# ZKŘÍŽENÉ VAZY

rotační stabilita kolene v EXT



# ZKŘÍŽENÉ VAZY

rotační stabilita kolene v EXT

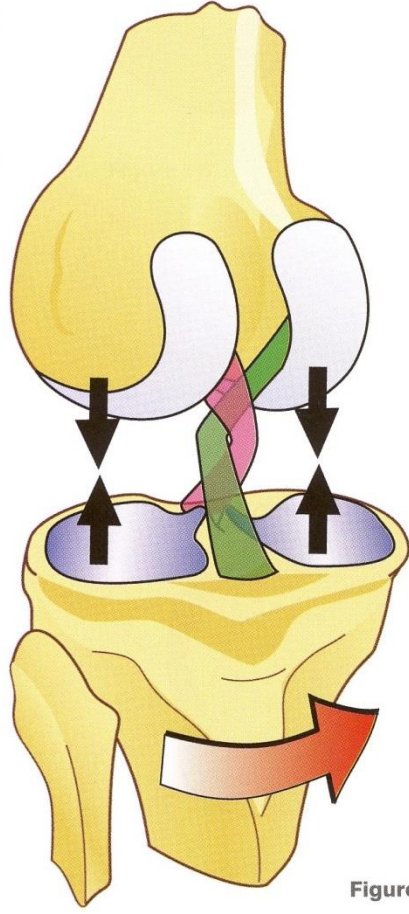


Figure 214

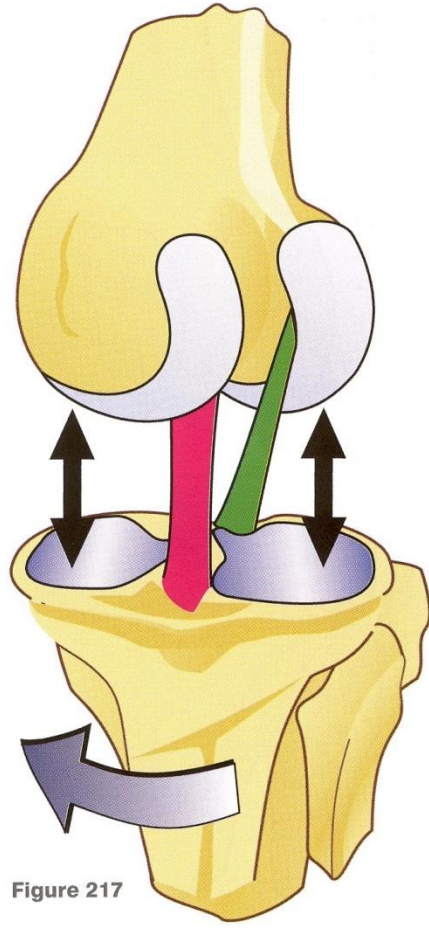


Figure 217

# ZKŘÍŽENÉ VAZY

rotační stabilita kolene

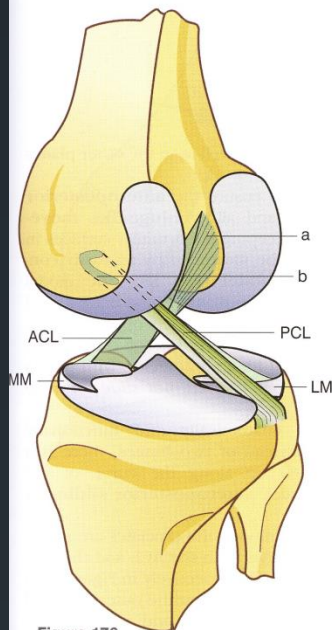


Figure 176

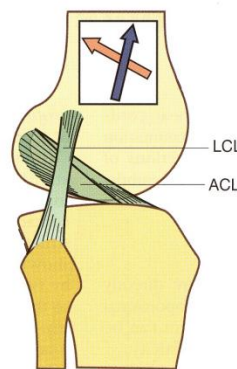


Figure 181

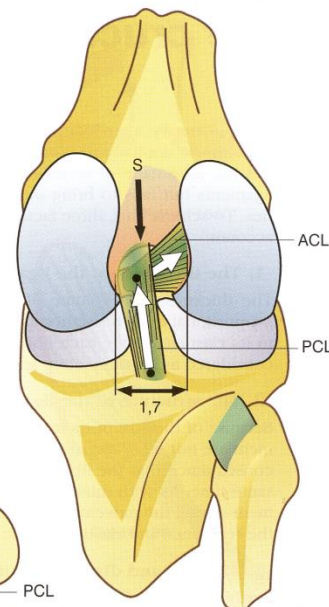


Figure 180

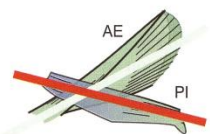


Figure 178

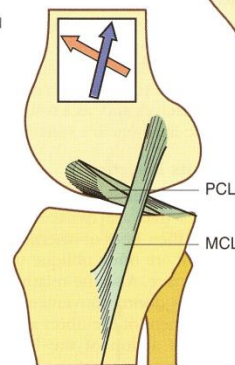


Figure 182

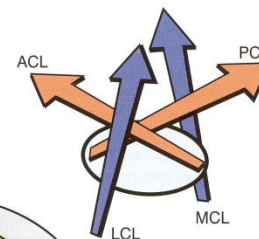


Figure 183

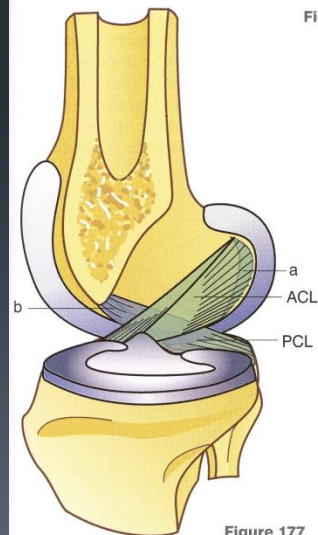


Figure 177

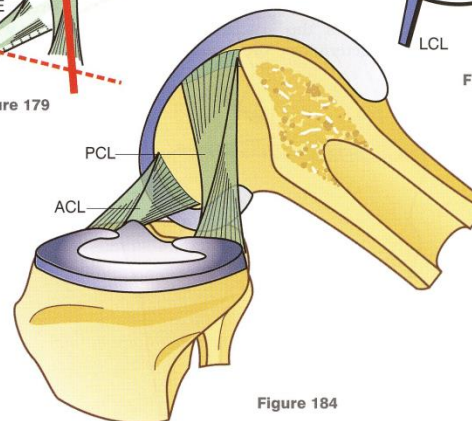
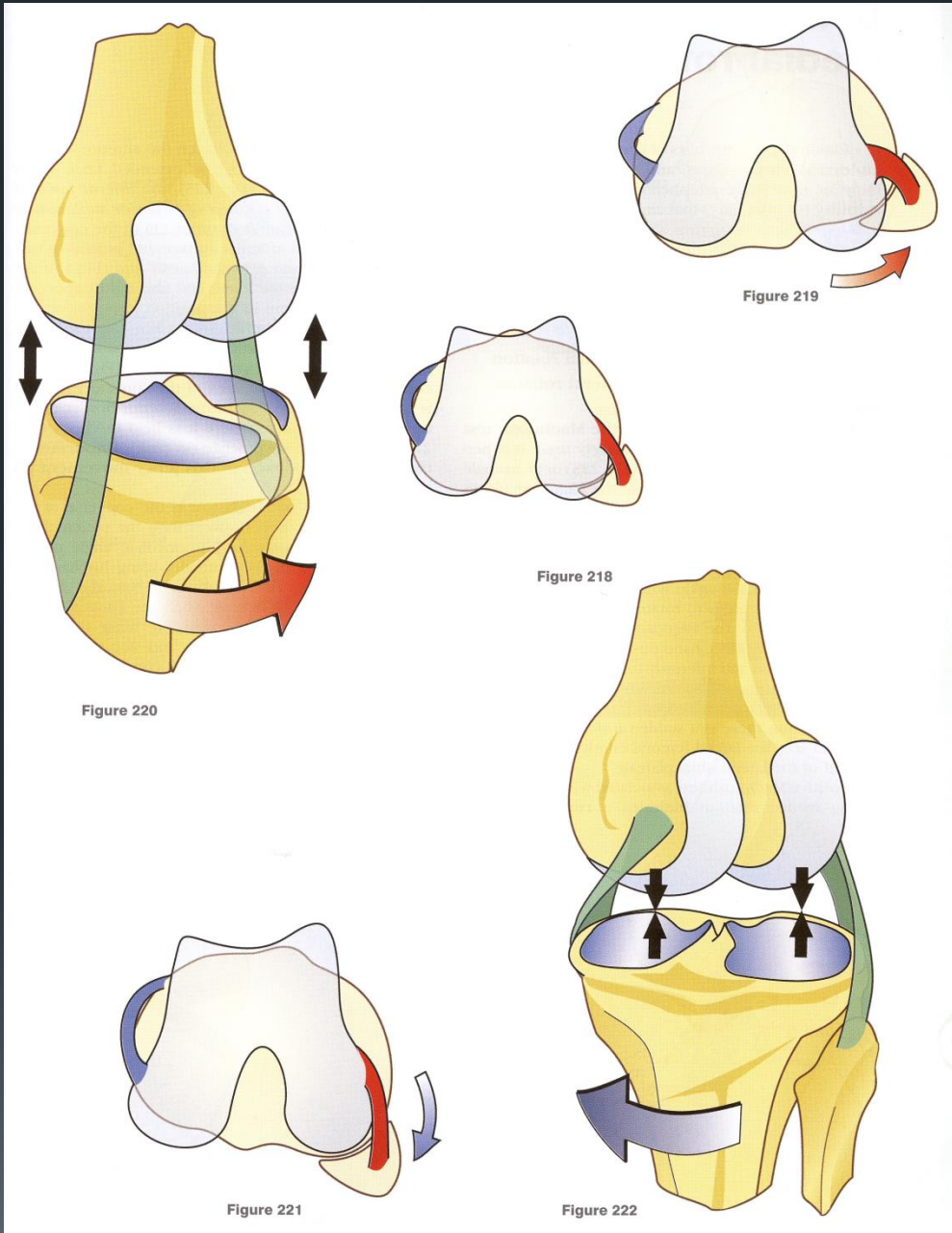


Figure 184



# KOLATERÁLNÍ VAZY

rotační stabilita kolene



# ZKŘÍŽENÉ VAZY

## TESTY AP STABILITY

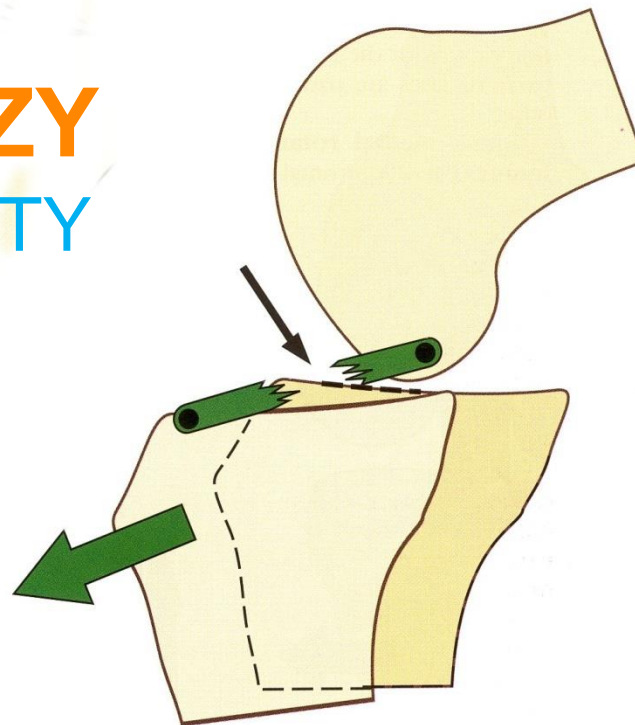
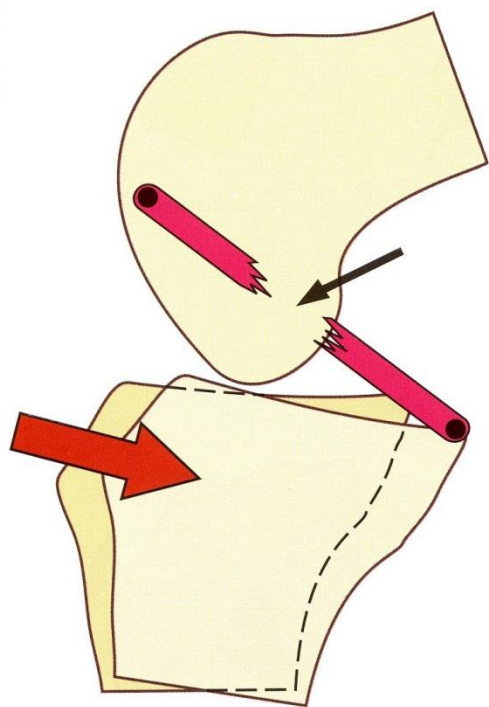
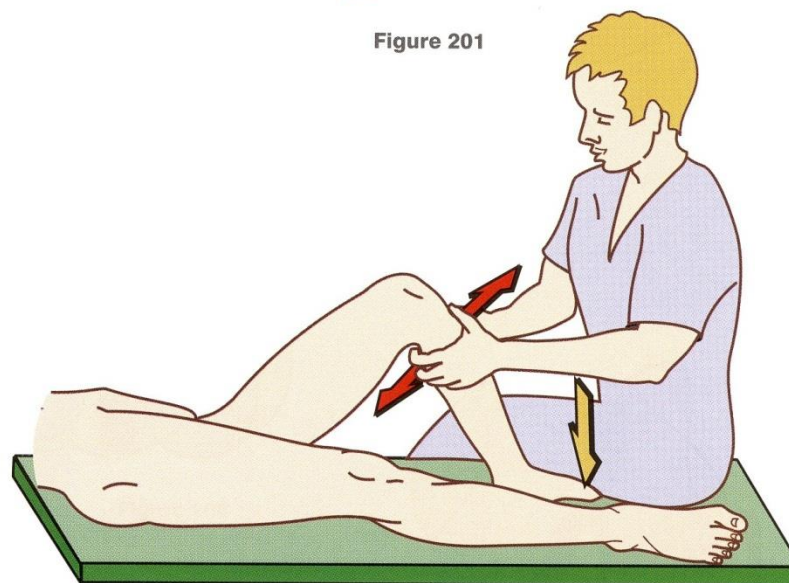
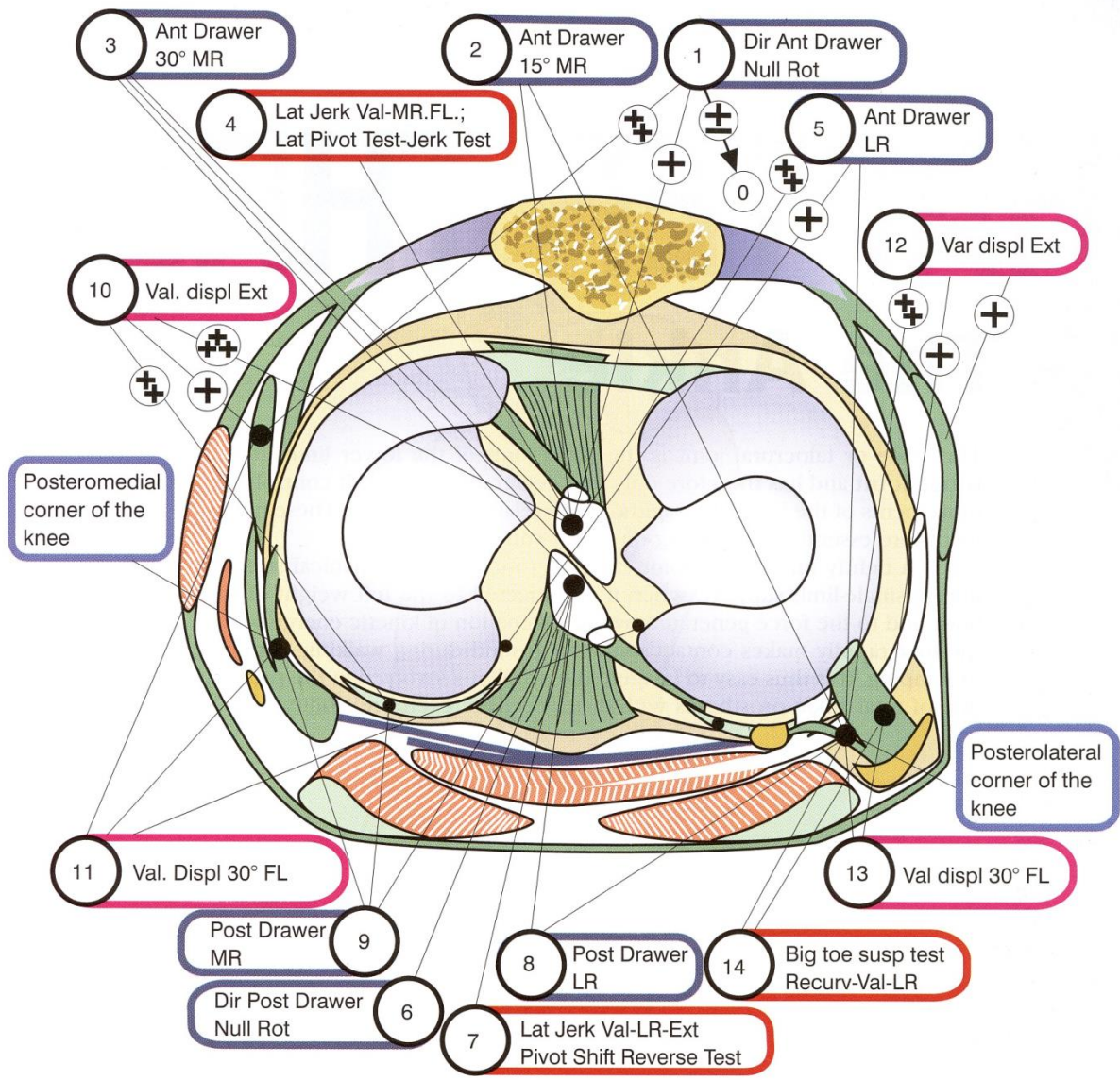


Figure 201



# DALŠÍ TESTY



# AKTIVNÍ POHYBOVÁ KOMPONENTA

40

- FLEXE - EXTENZE
- ZEVNÍ – VNITŘNÍ ROTACE



# EXTENZE KOLENE

m. rectus femoris

- vzťah k m. gluteus max

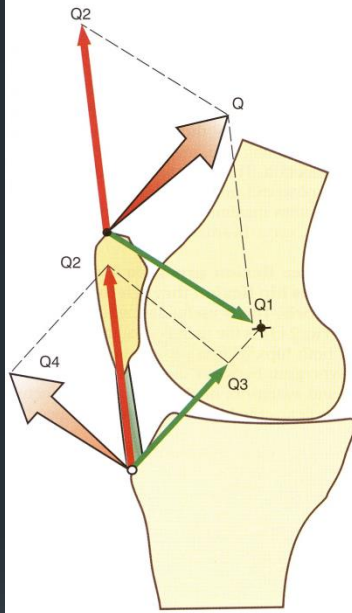


Figure 238

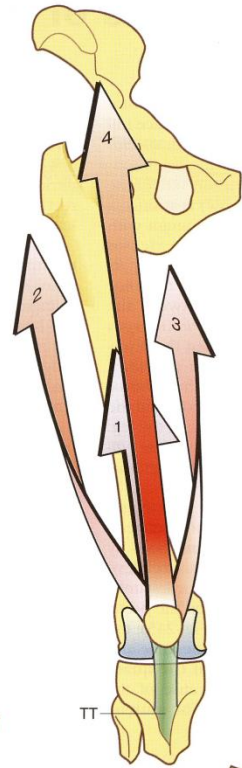


Figure 237

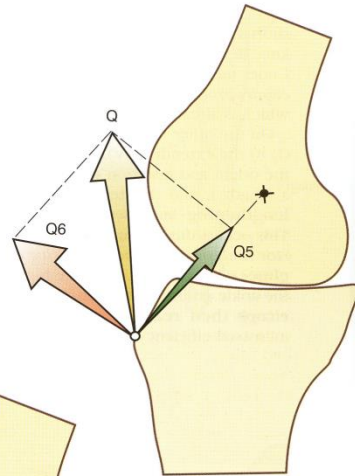


Figure 239

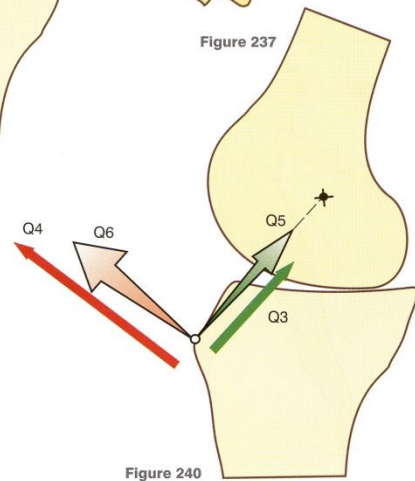
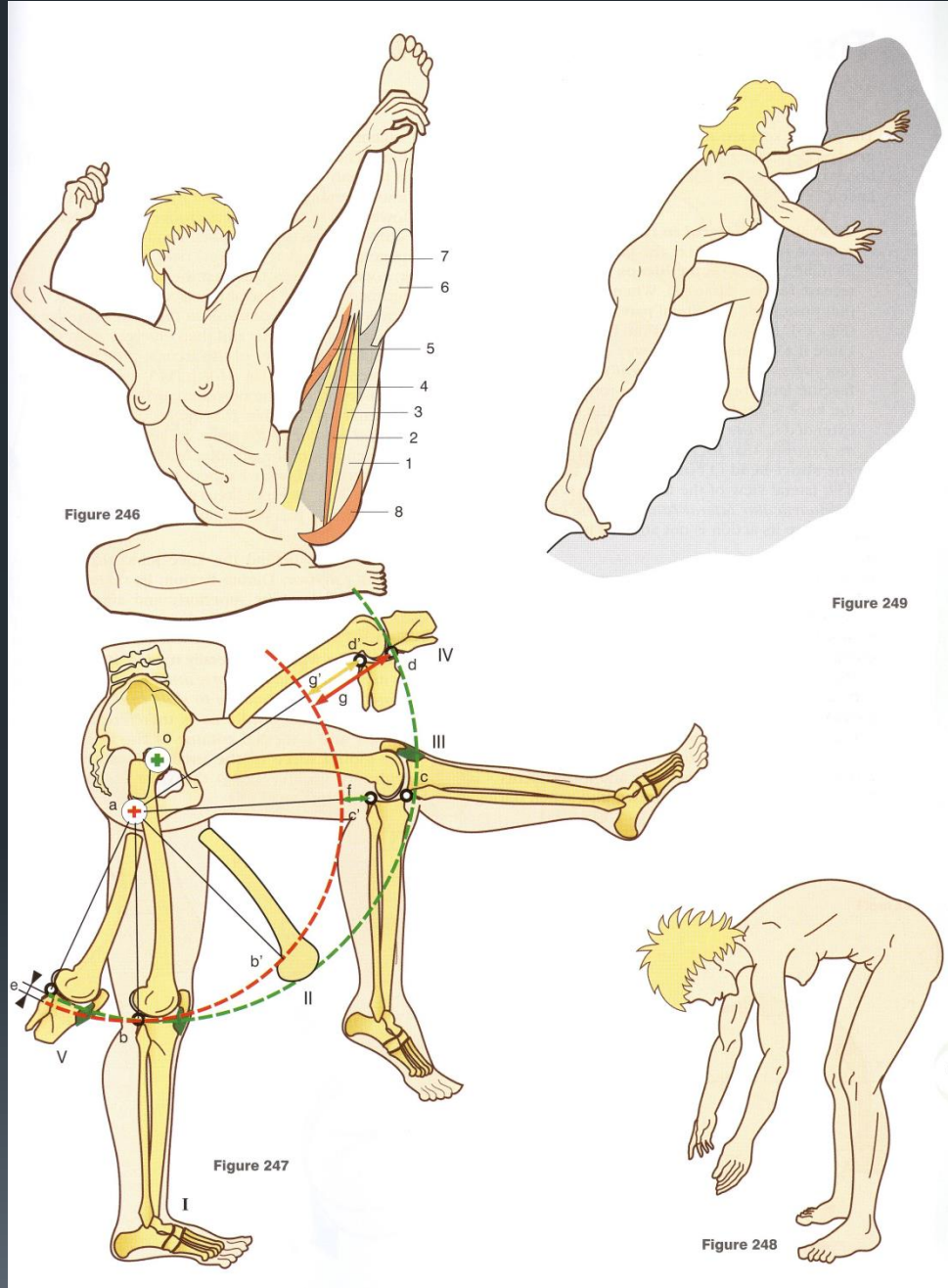


Figure 240

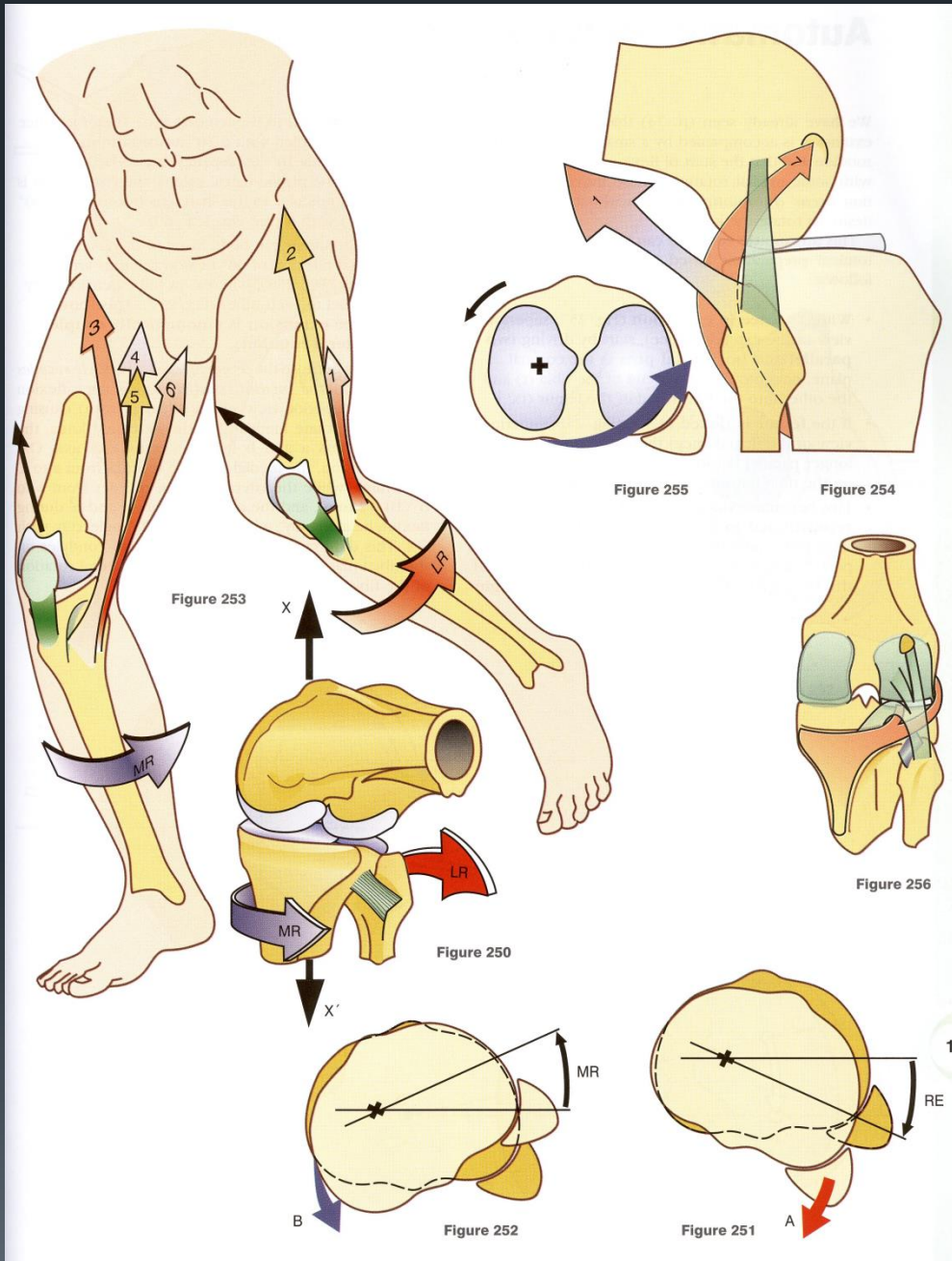
# FLEXIO KOLENE

HAMSTRINGY - M. GLUTEUS MAX.



# ROTACE KOLENE

aktivní komponenta



# ROTACE KOLENE

pasivní komponenta

flexe / extenze

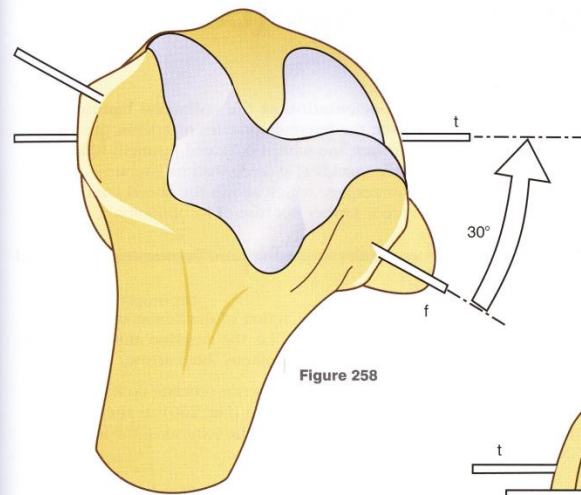


Figure 258

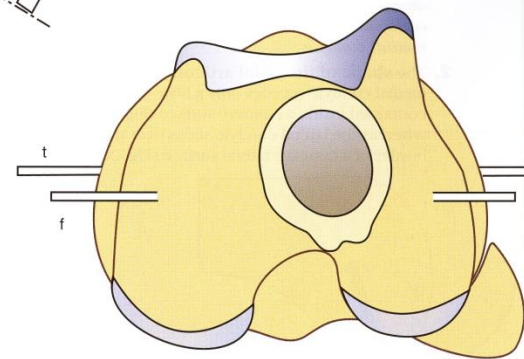


Figure 257

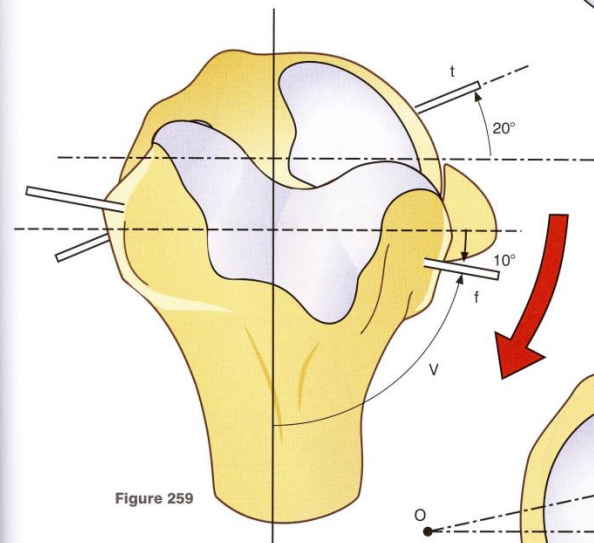


Figure 259

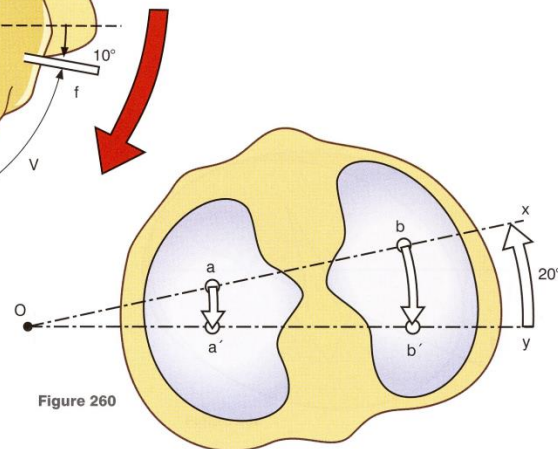


Figure 260

# PATOLOGICKÉ STAVY

- VVV
  - Kongenitální dislokace kolene
  - Kongenitální luxace pately
  - Patella bipartita
- Onemocnění kolene z přetížení
  - M. Osgood Schlatter
  - Osteochondritis dissecans
  - entezopatie
- Traumatologie ...



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