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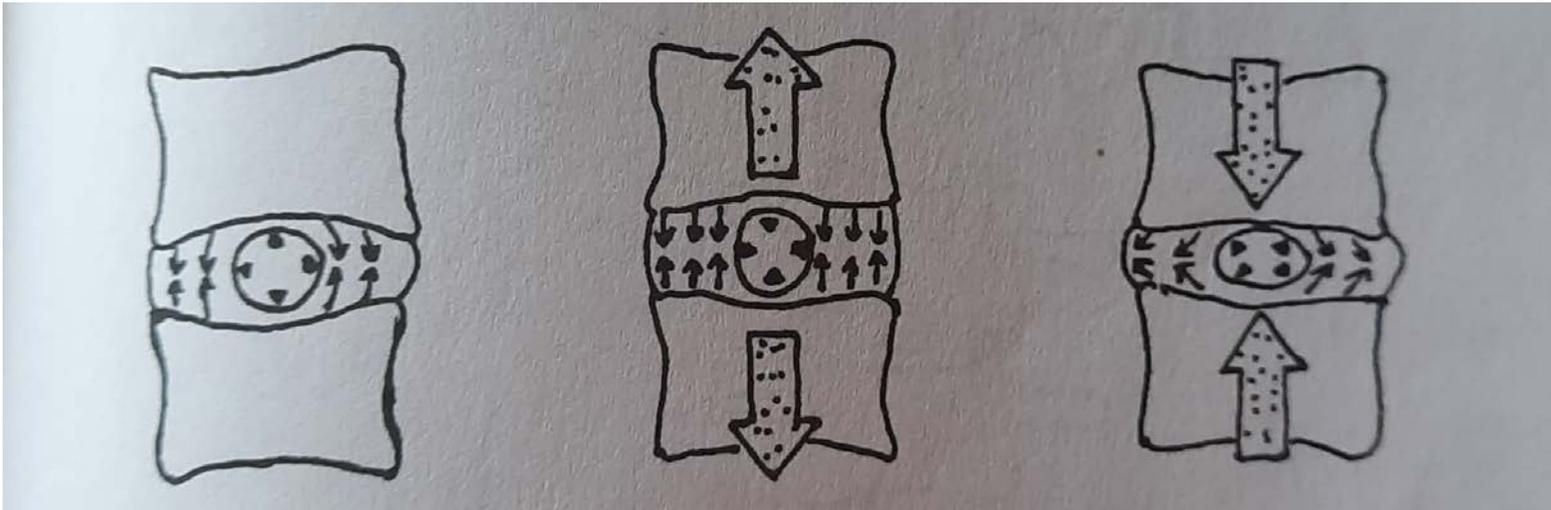
# Aspects of joint protection

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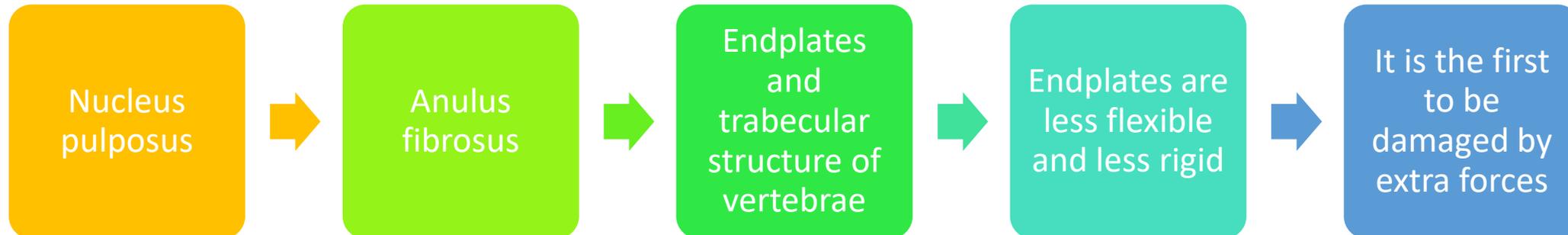


## Forces acting on the vertebrae - compressive forces, compression

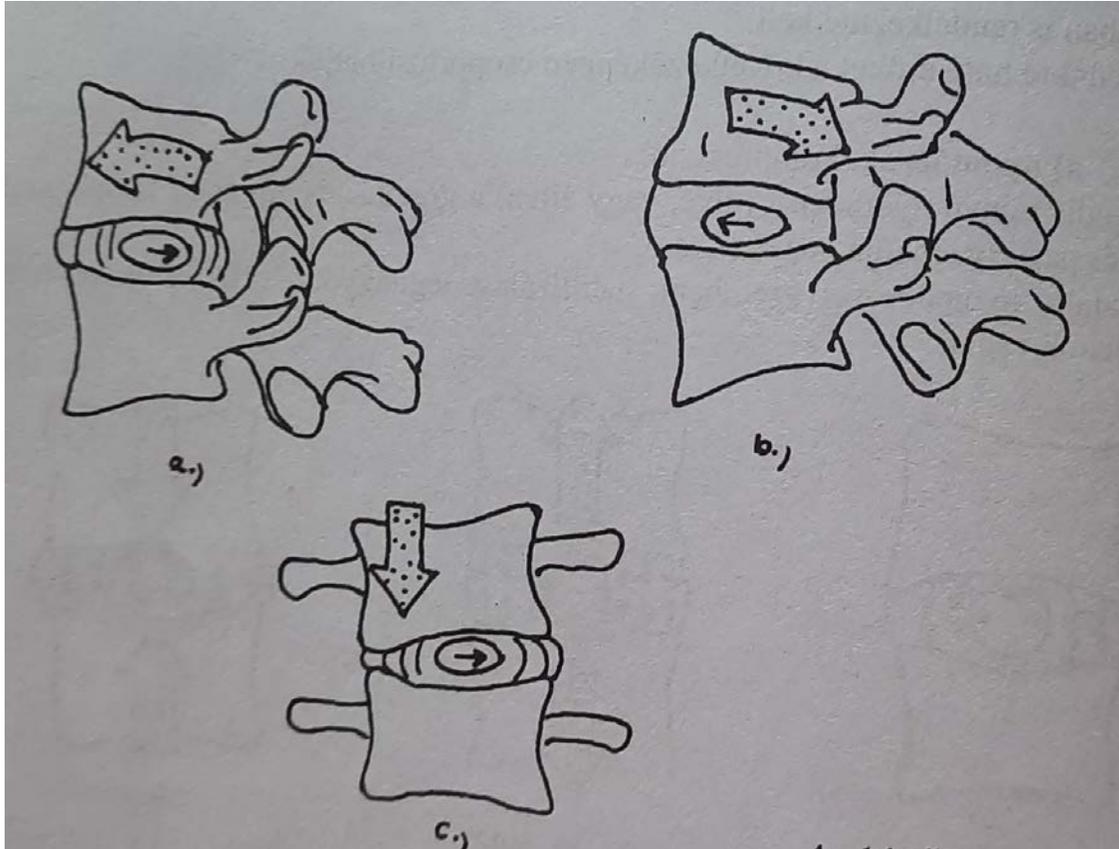


### Axial compressive forces:

- Gravitational force, active and passive tension of muscles, ligaments
- Discus intervertebralis provides stability



## Forces acting on the vertebrae



### Bending forces

- Compression + torsion
- Flexion : front compression + back tension increases
- Extension: compression at the back + tension increases at the front
- Lat.flexion: same side compression + opposite side extension increase



## Forces acting on the vertebrae

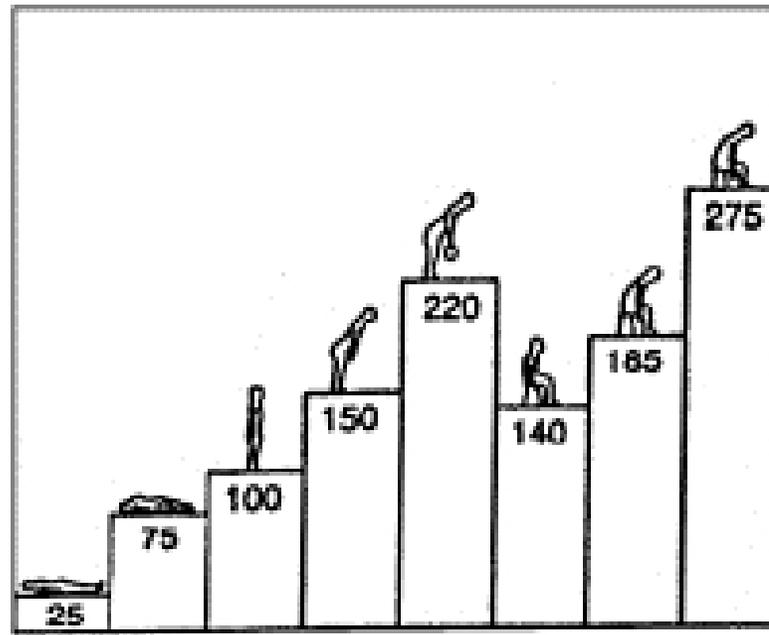
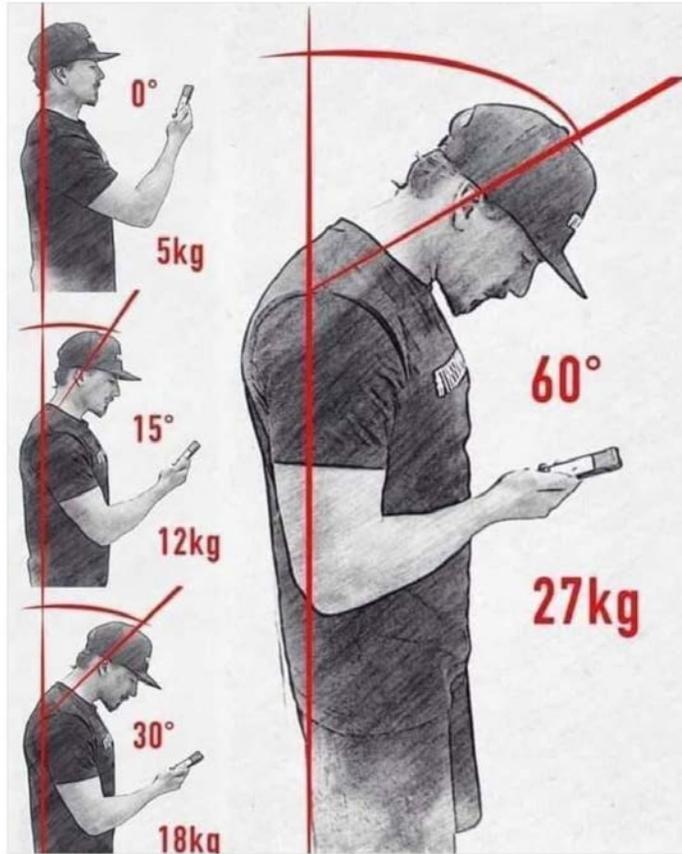
### Torsion forces

- Arise during axial rotation
- Stability is provided by the intervertebral discs (mainly the anulus fibrosus) and the small joints
- The potential for rotation decreases from the top down
- Only anulus fibrosus in the lumbar region, therefore destruction is common in this region
- The potential for injury is even greater when torsional forces are combined with compressive and bending forces

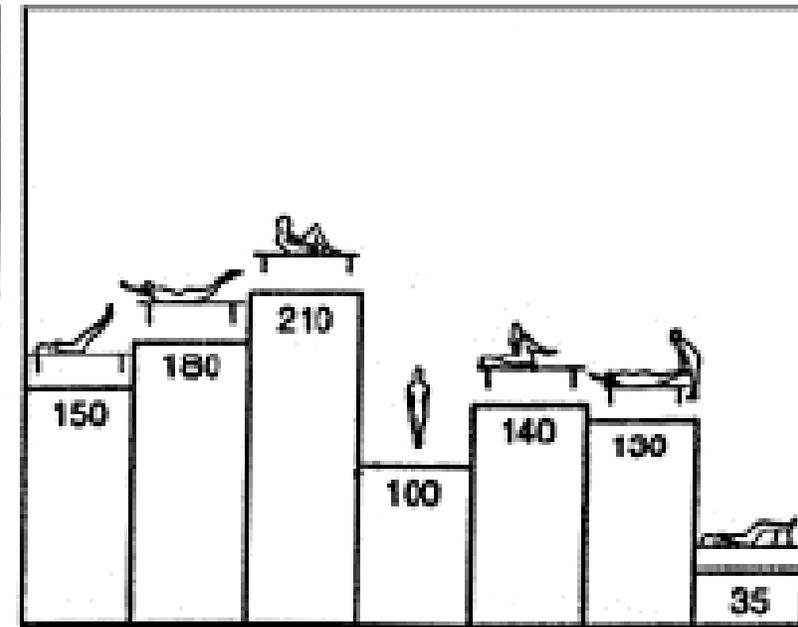
### Shearing forces

- Upper vertebra would slide in a straight direction relative to the lower vertebra
- Prevented by small joints and intervertebral disc

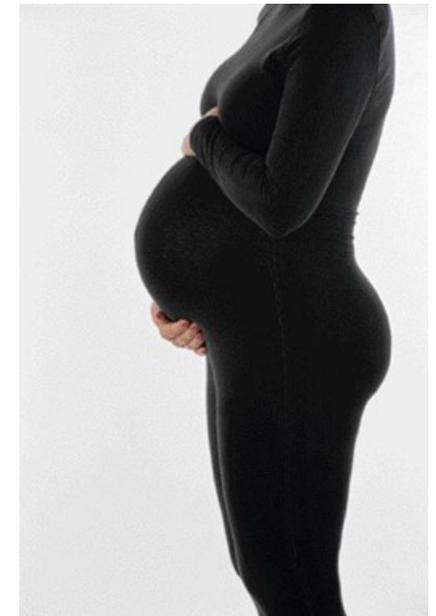
# Ízületvédelem szempontjai



Various positions



Positions and exercises





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# Thank you for attention!

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