



# Musculoskeletal Medicine

## Pain and Dysfunction

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# MTV – "Back pain"

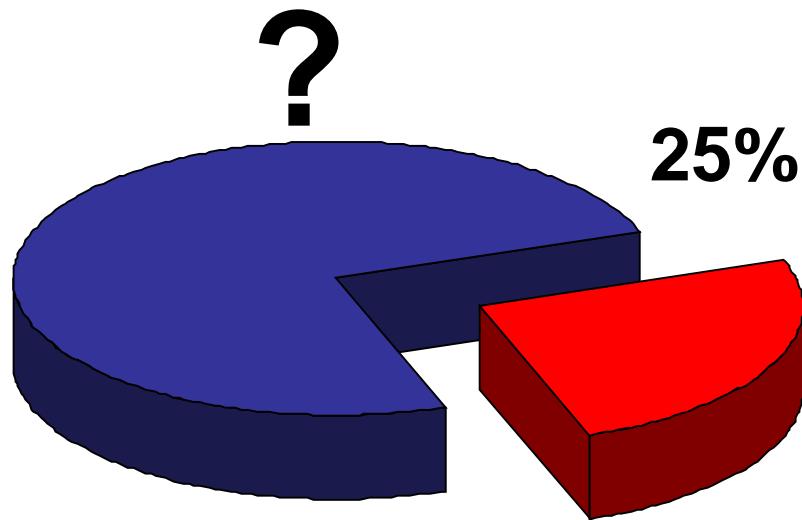
	Decreased activity	- Long lasting	- Short lasting	- Change of job	- Cessation of work	Pension due to health
Musculoskeletal disease	38	47	21	47	43	33
Heart disease	6	9	1	5	13	14
Nerve system disease	5	6	4	5	8	11
Lung disease	20	9	39	5	5	6
Injury	10	7	14	10	5	6
Psychiatric disease	2	2	1	6	8	8
Other	19	19	21	22	7	22

DIKE, 1991

# Musculoskeletal disease

?

# Musculoskeletal disease



# **Musculoskeletal Medicin**

Diagnosis and treatment of  
diseases and dysfunctions in the  
motor system

# Musculoskeletal Medicine

42 year old male complaining of longstanding pain in the neck, radiating to the upper arm. Previous medical examination incl. neurology were all normal.

X-ray's and MR showed no pathology, that could explain the pain

Clinical, functional examination showed restricted movements in certain directions.

The palpatory examination of the cervical spine showed segmental movement restriction, local tenderness and hypertone muscles.

# Musculoskeletal Medicine

1. Red flags
2. Other patho-anatomical etiologies
3. No proper diagnosis : unspecific pain

# **Musculoskeletal Medicine**

## **Somatic dysfunction**

Somatic dysfunction is defined as impaired or altered function of related components of the somatic system : skeletal, arthrodial and myofascial structures and the related vascular, lymphatic and neural elements.

(Hospital Adaption of the International Classification of Diseases, ed.2.1973)

# **Musculoskeletal Medicine**

**The diagnostic criteria for the S.D. :**  
**“TART”**

- **T** enderness. Not the pain the patient feels, but the tenderness revealed by palpating the dysfunction.
- **A** symmetry of related parts of the MS system, say shoulders, iliac crests etc
- **R** ange of motion is restricted (could be also hypermobility) .
- **T** issue texture abnormalities : hypertonus in segmental muscles and altered function in the sympathetic autonome nervous system to skin “viscera”

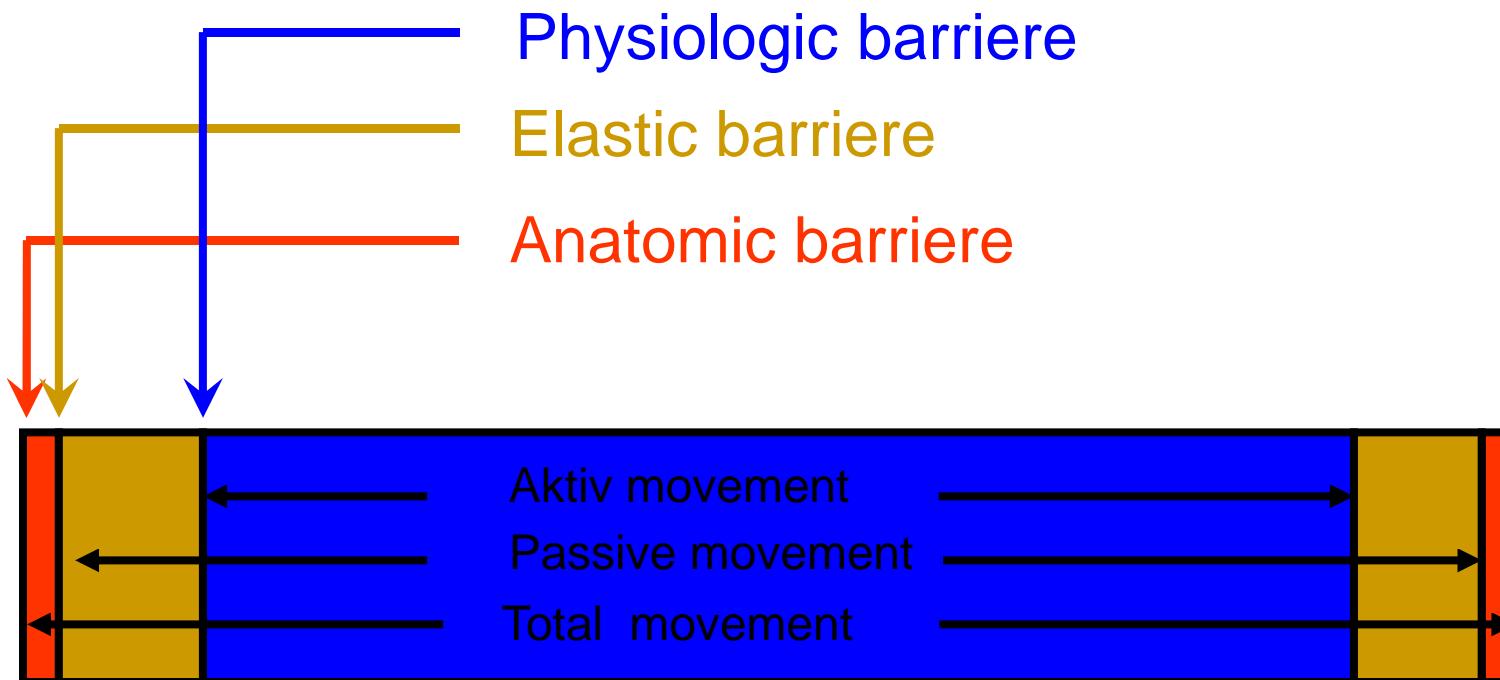
# Normal barriers

Range of movement

Active range

Passive range

Total range



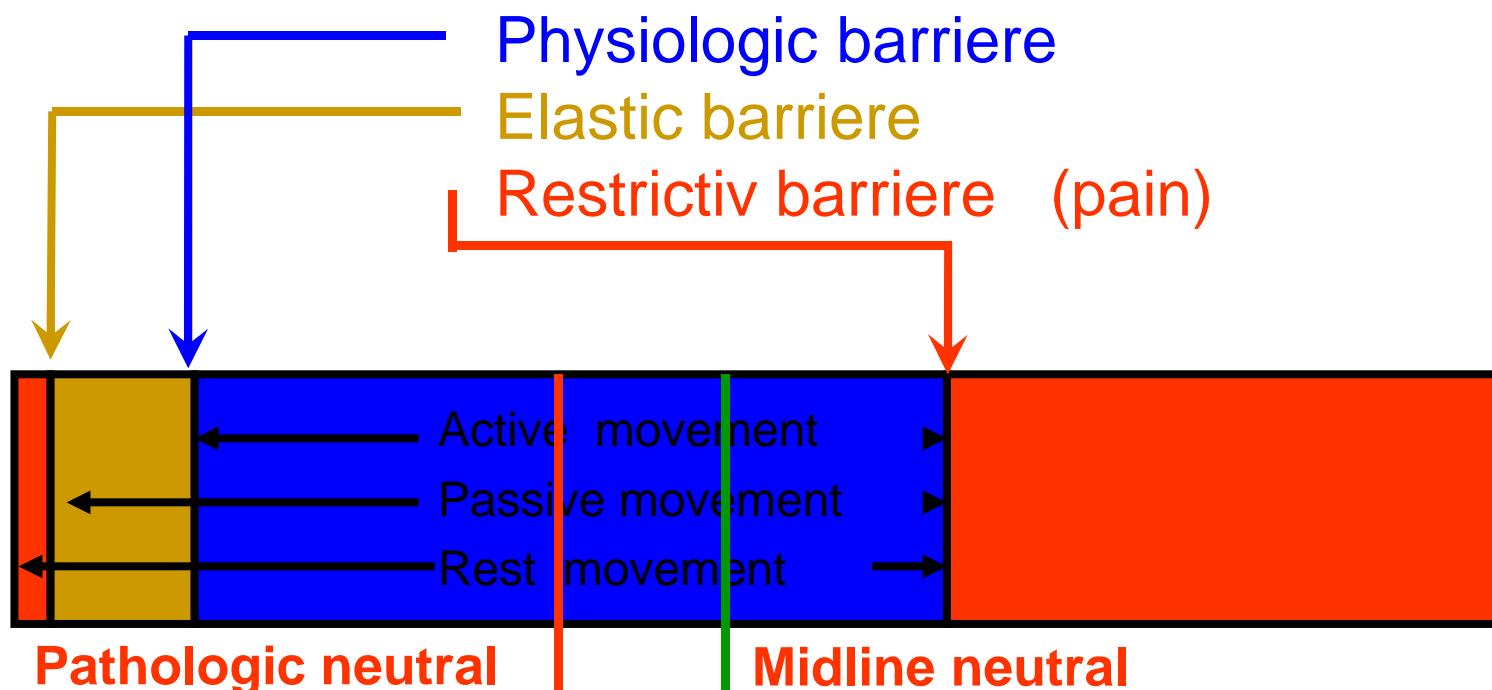
# Restricted barriers

Range of movement

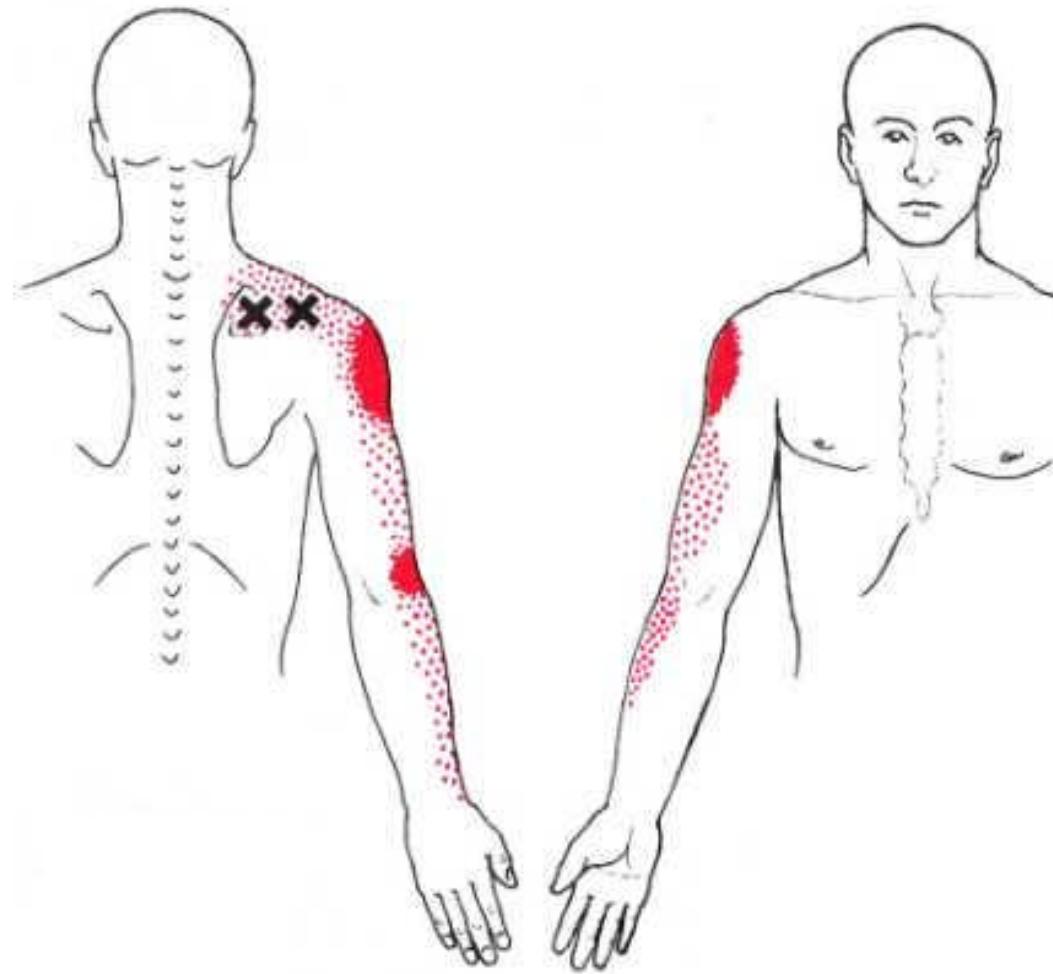
Active range

Passive range

Total range



# Case



# Girls against boys.....

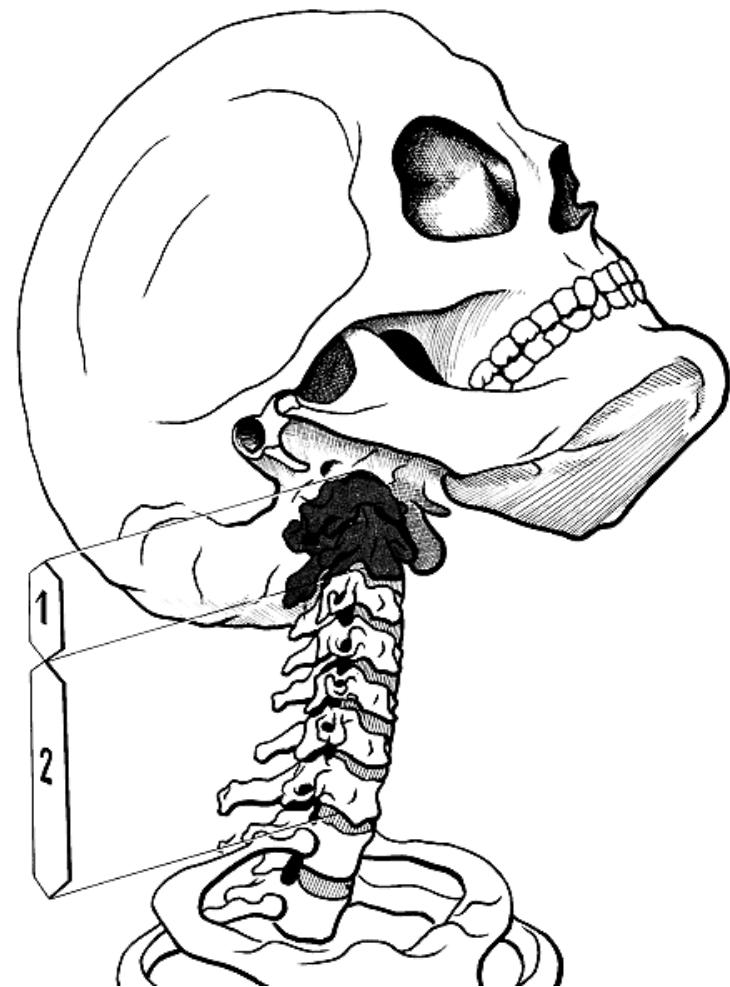
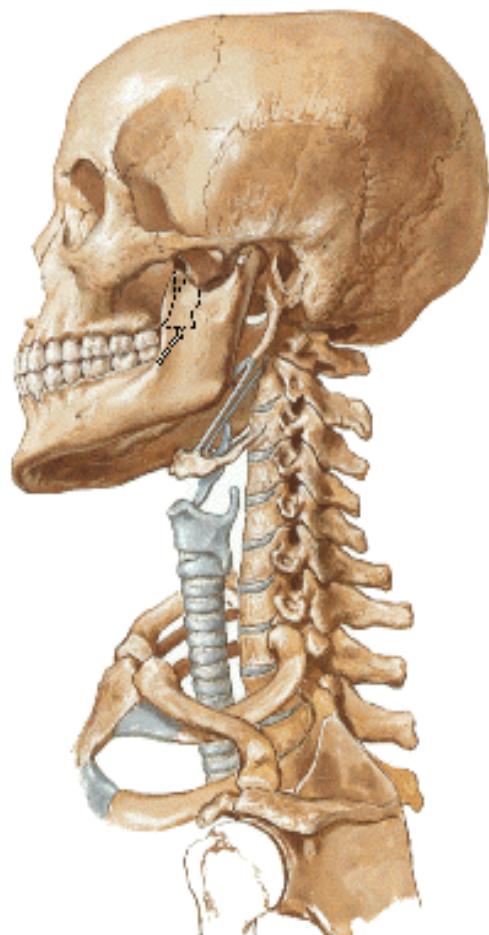


# Anatomy & biomechanics

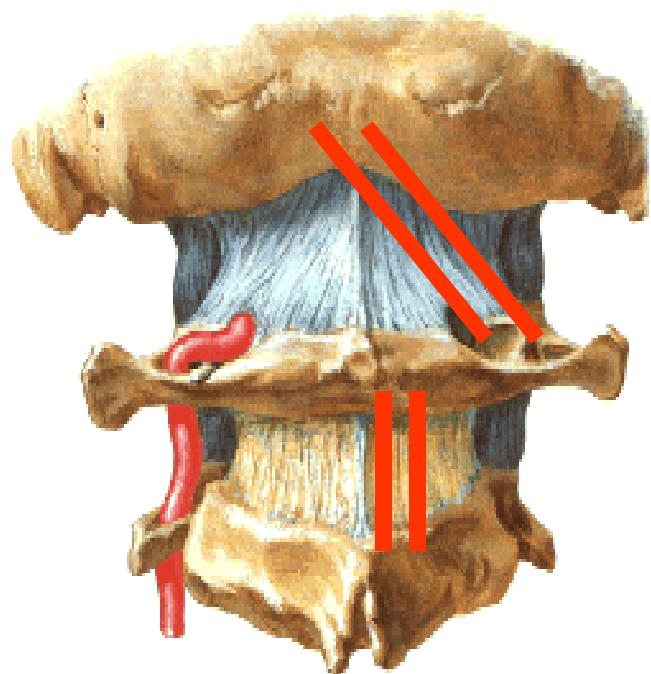
## Neck and shoulder



# Neck- Anatomy



# Neck- Anatomy



**C0-C1: Nod**

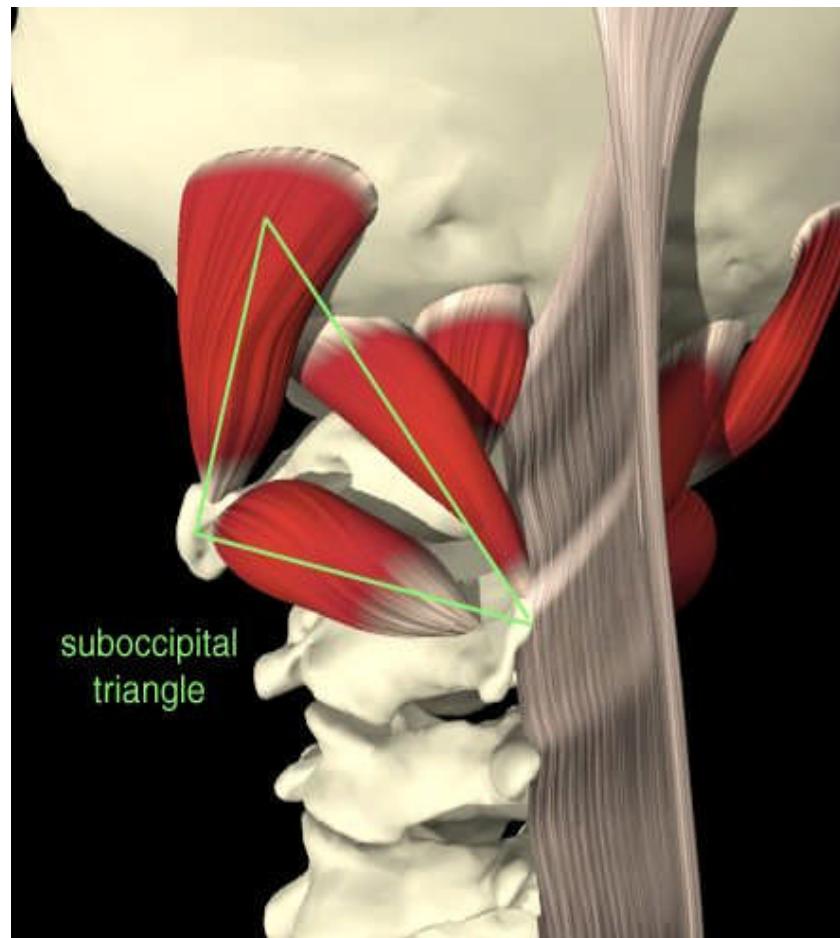


**C1-C2: Turn**

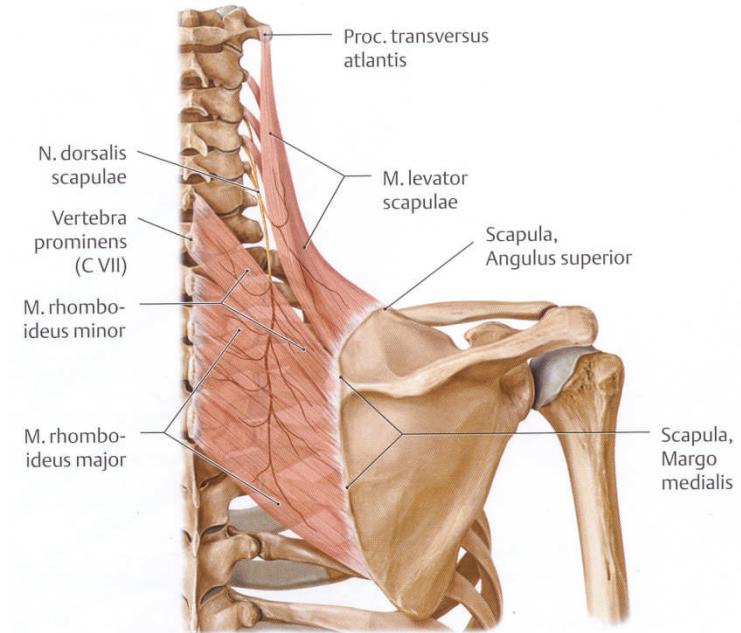
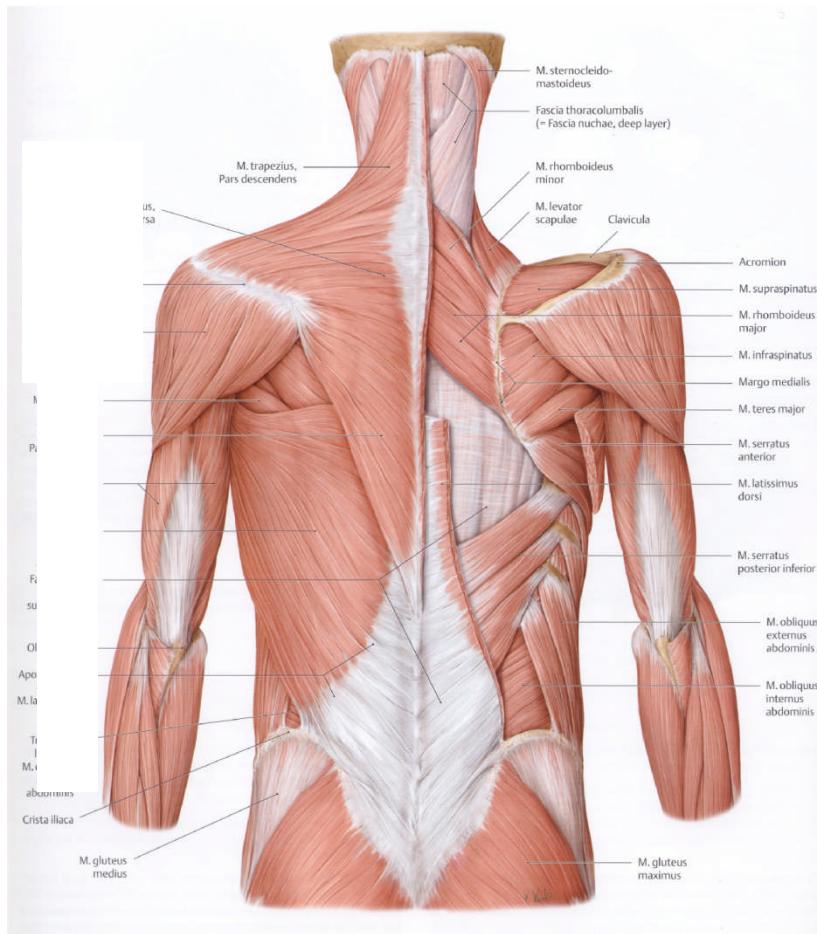
# Neck- Anatomy

## NECK ROSETTE:

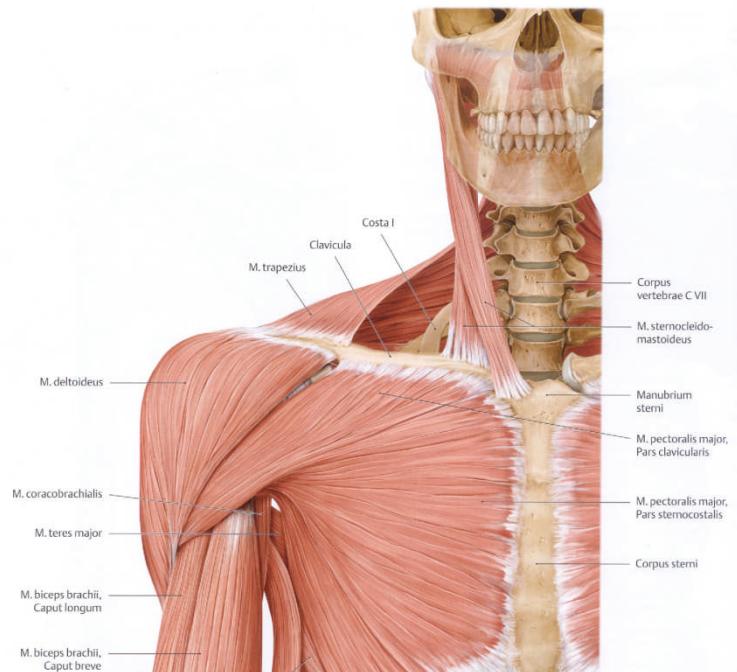
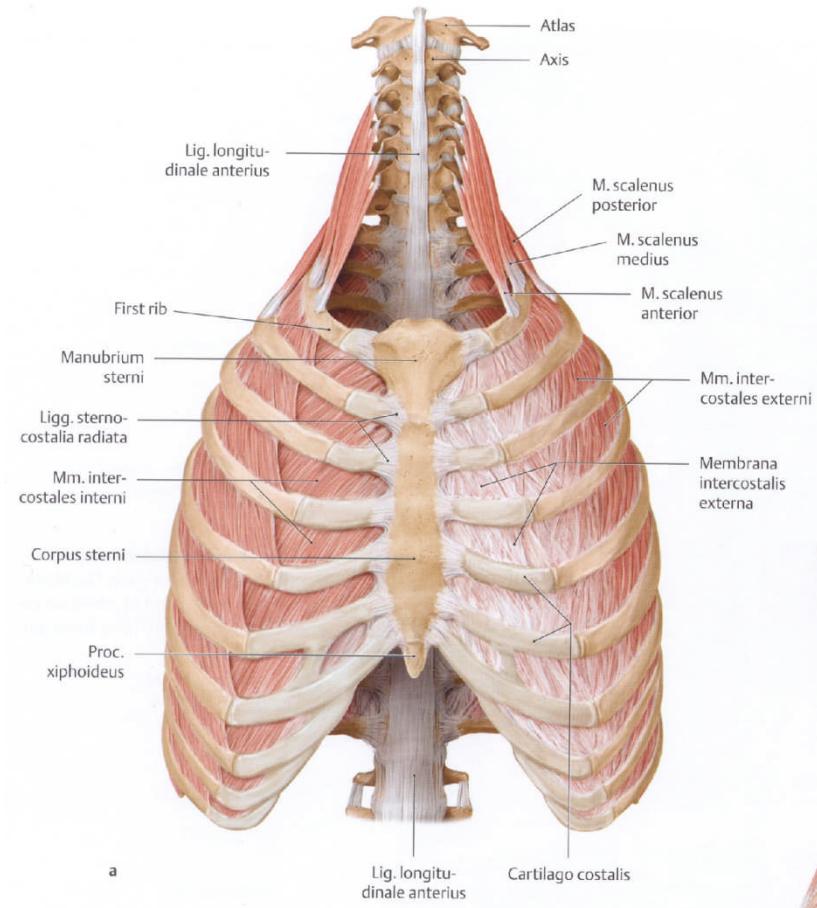
- M. rectus capitis  
major et minor
- M. obliquus capitis  
sup. et inf.

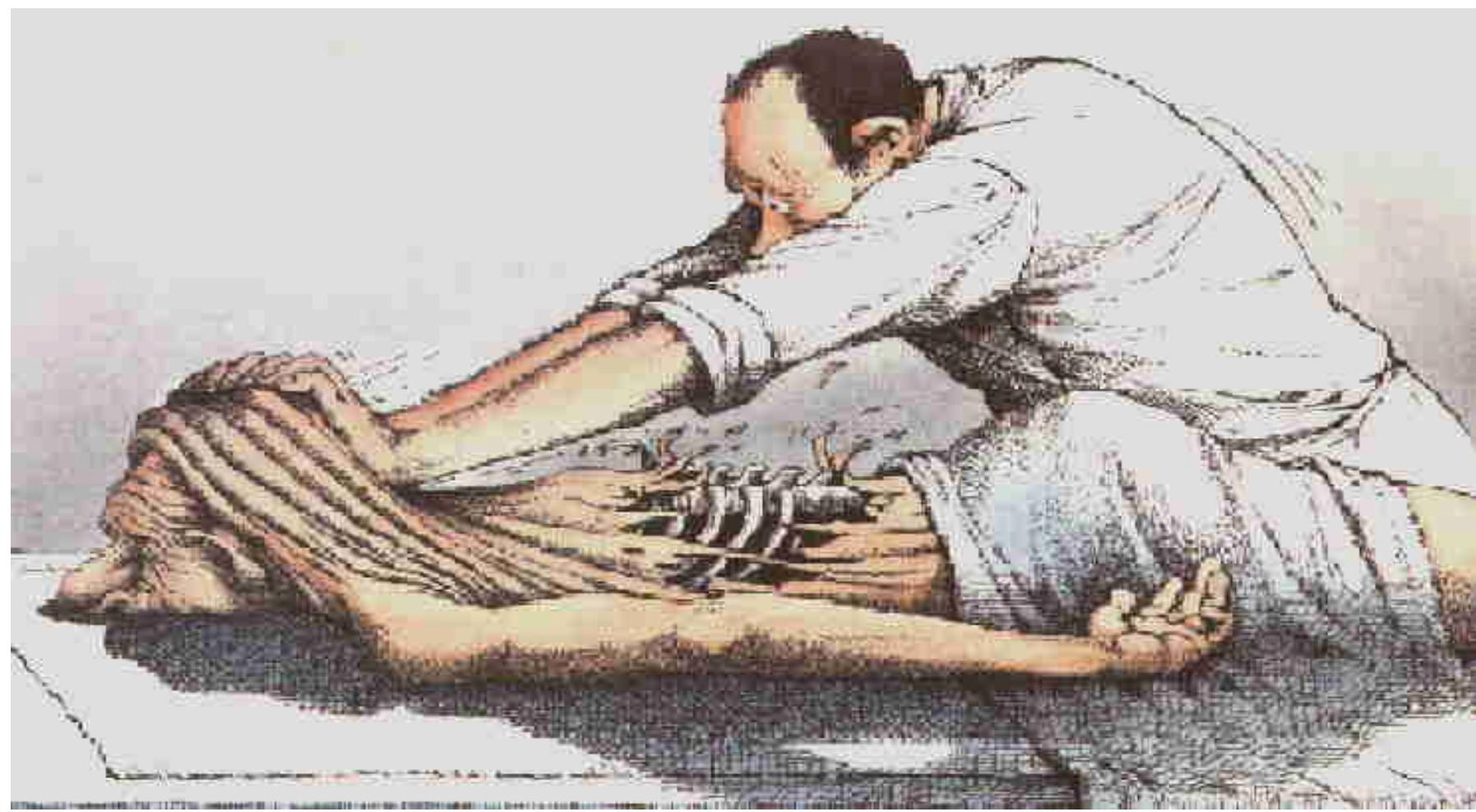


# Neck- Anatomy

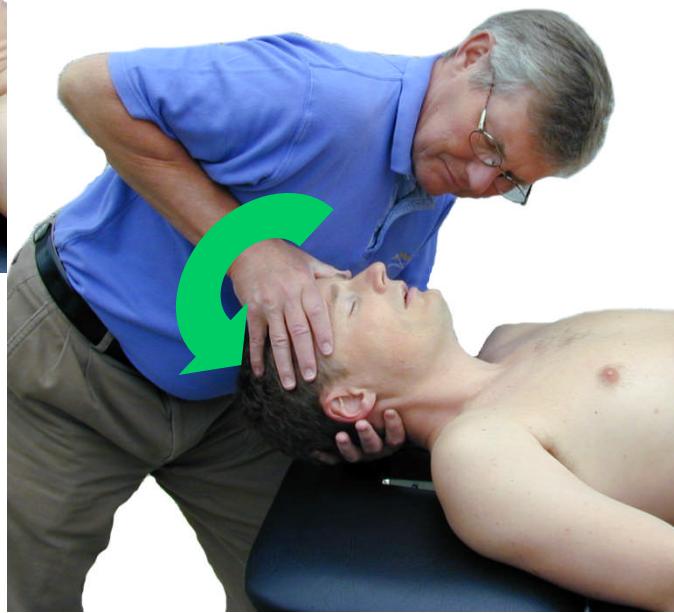


# Neck- Anatomy





# C0 – C1



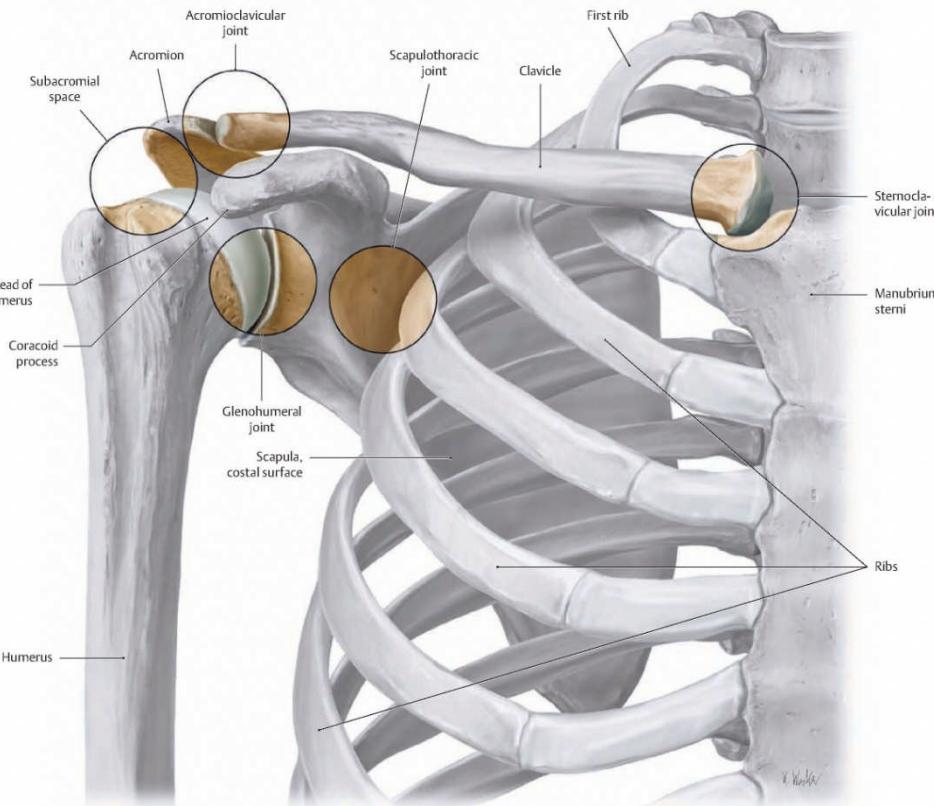
# C1 – C2



# C2 – C7



# Shoulder - Anatomy



**A The five joints of the shoulder**  
Right shoulder, anterior view.

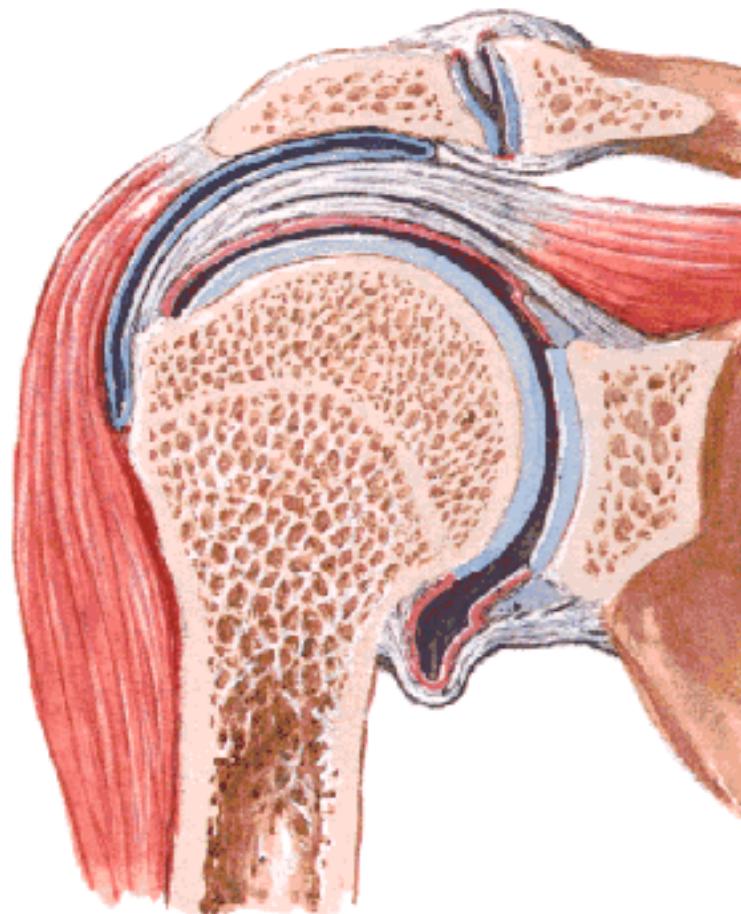
Illustrator: Karl Wesker

pp. 226-227

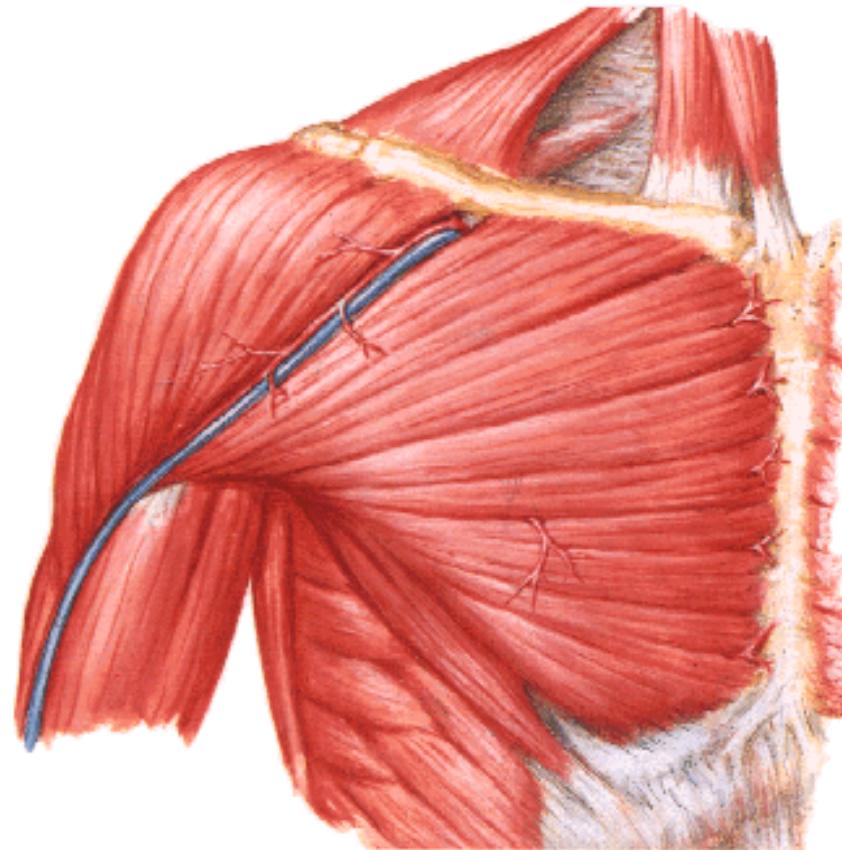
Schuenke et al. THIEME Atlas of Anatomy • General Anatomy and Musculoskeletal System  
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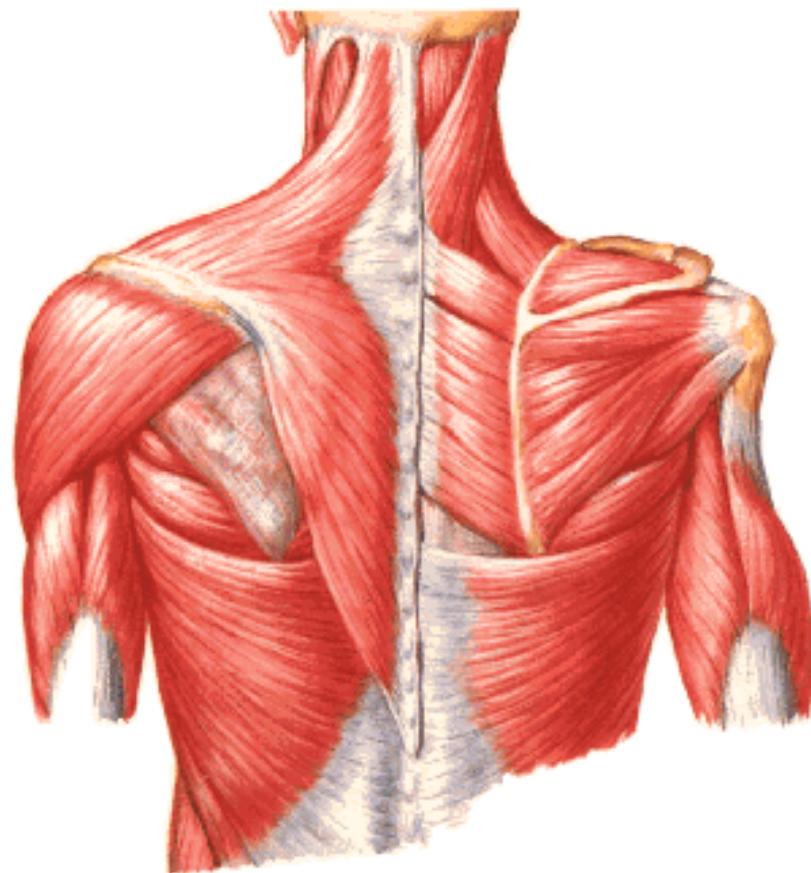
# Shoulder - Anatomy



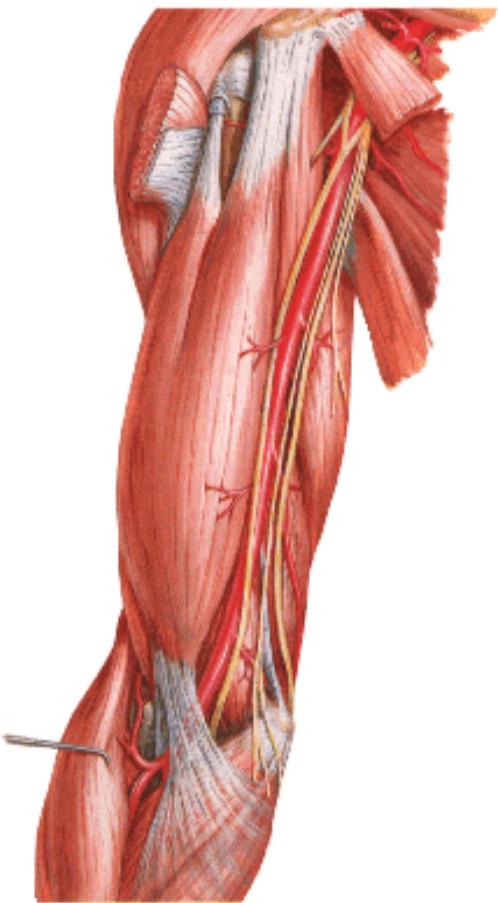
# Shoulder - Anatomy



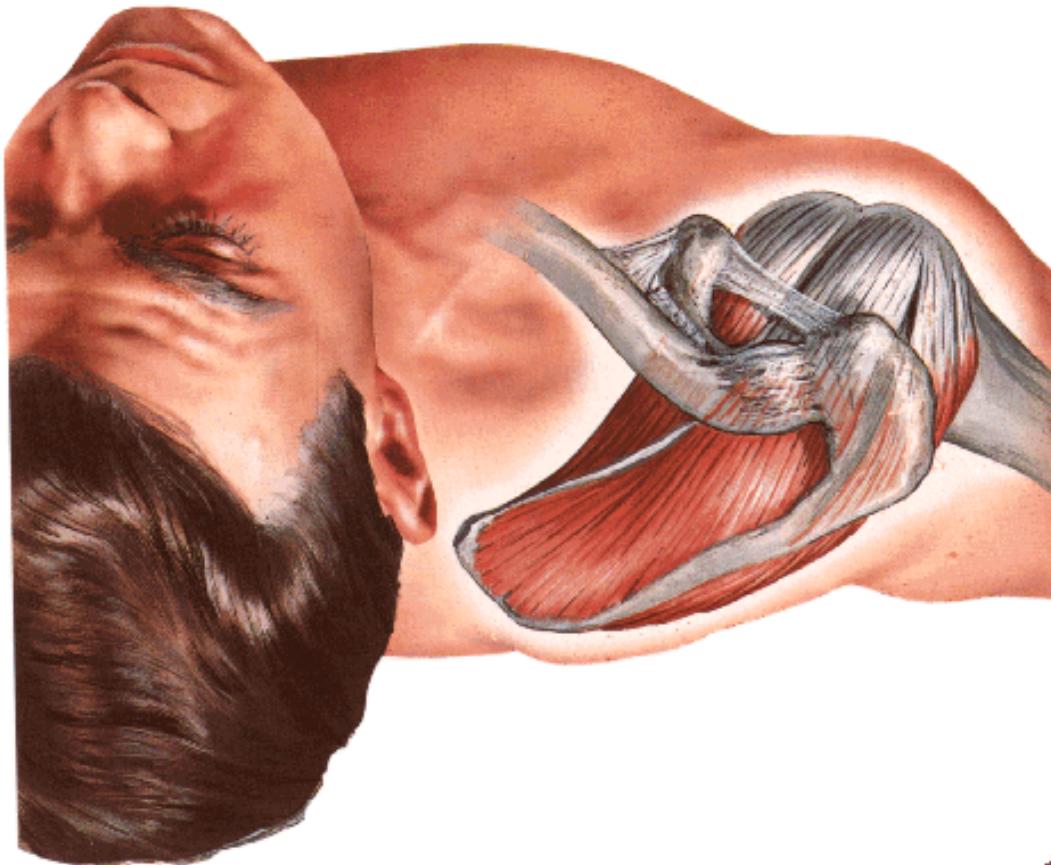
# Shoulder - Anatomy



# Shoulder - Anatomy

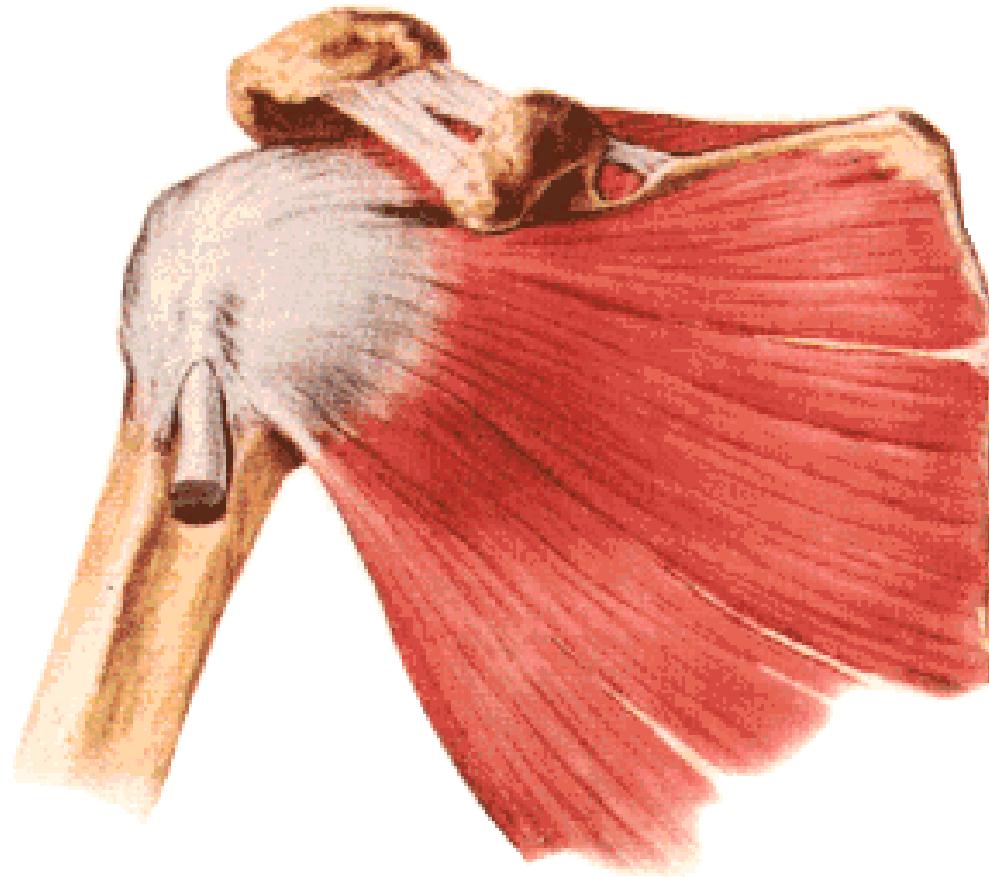


# Shoulder - Anatomy

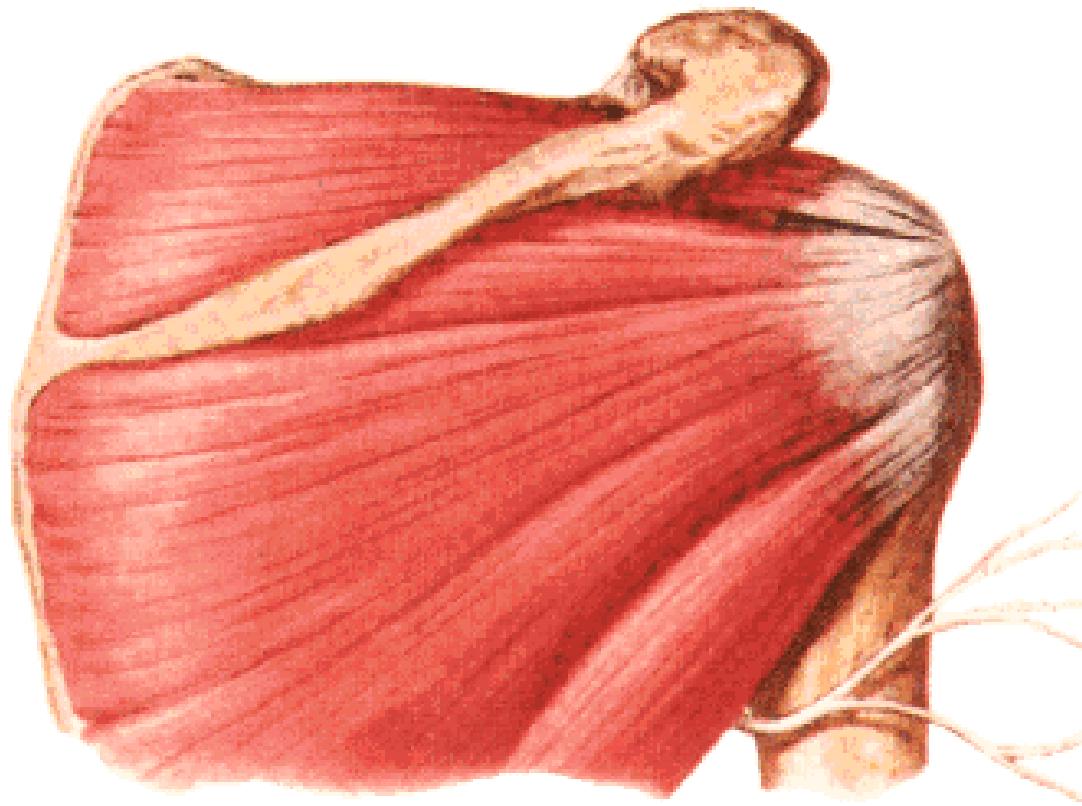


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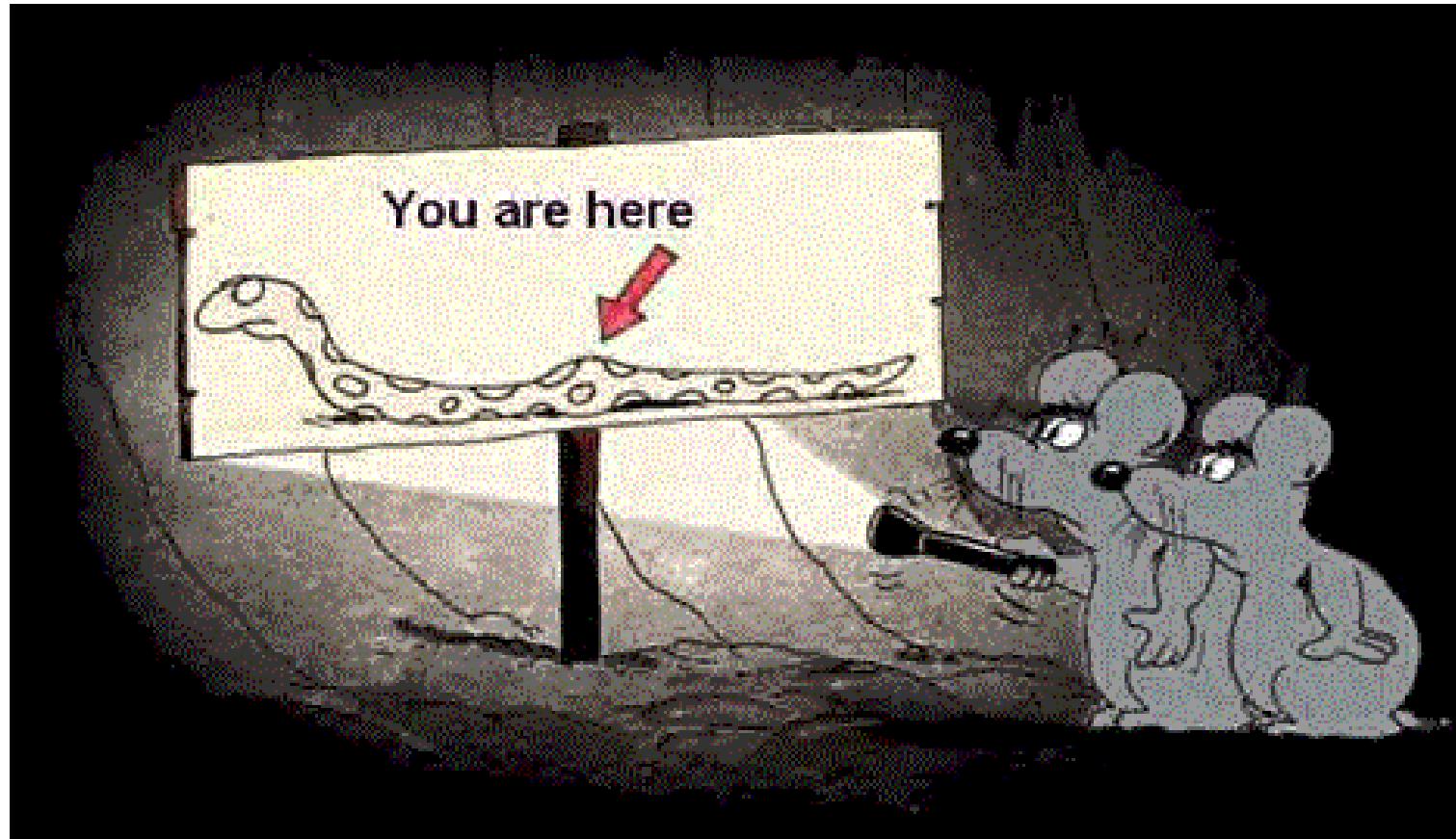
# Shoulder - Anatomy



# Shoulder - Anatomy

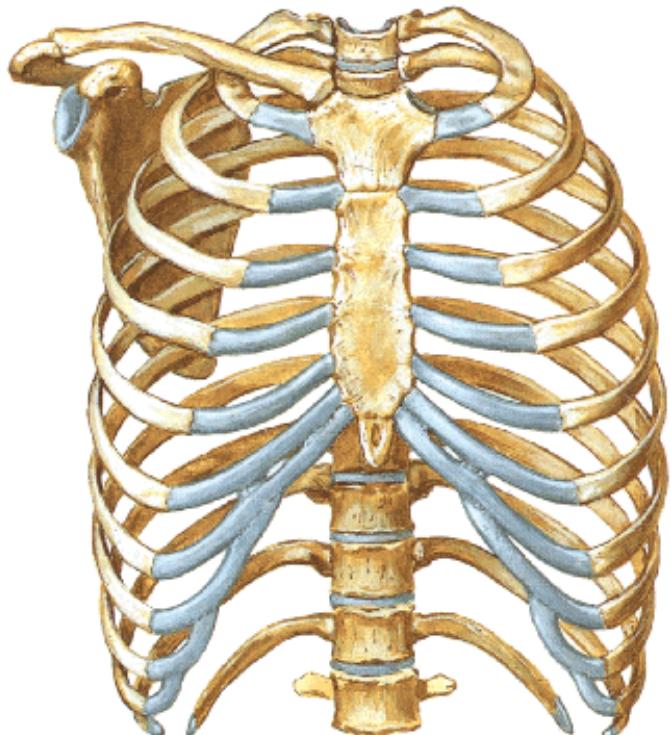


# Shoulder – Where to go?



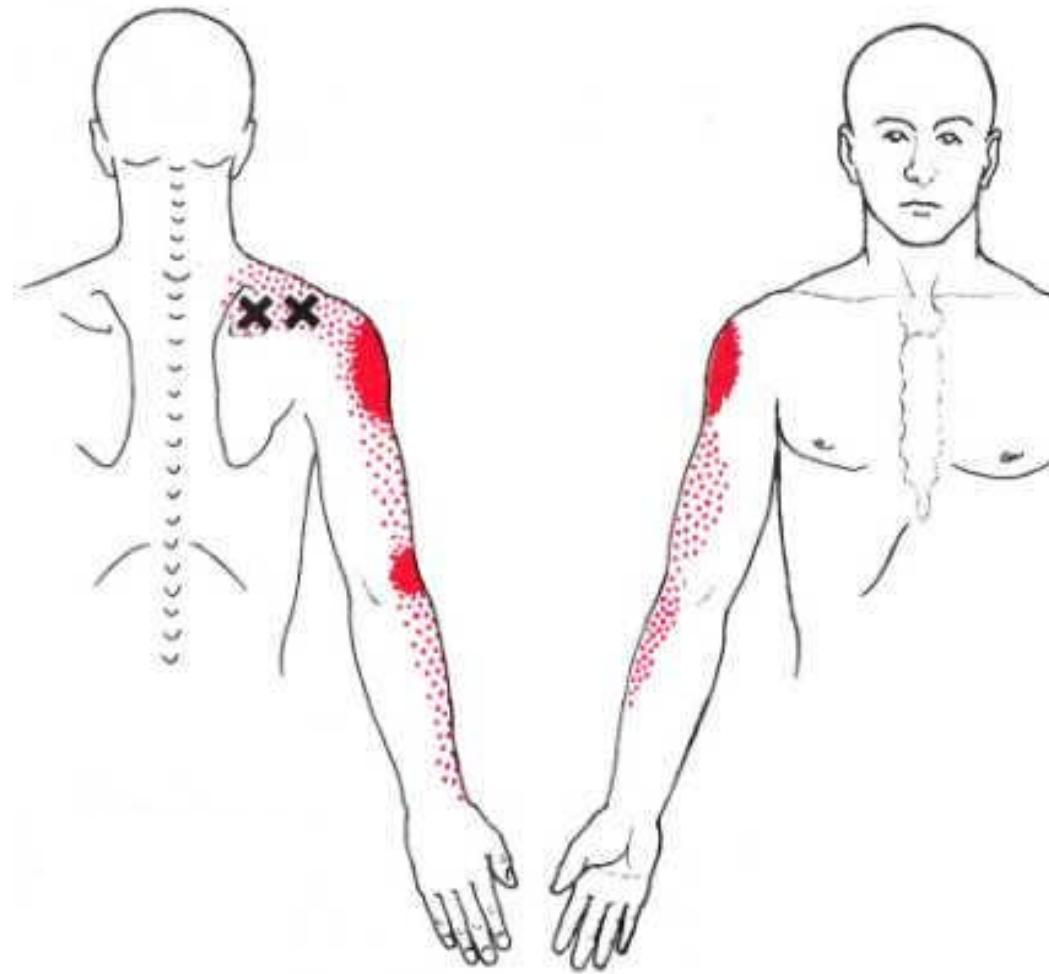
# Shoulder – Where to go?

All the way around:



- Art. sternoclaviculare
- Art. arcromioclaviculare
- Proc. coracoideus
- Art. glenohumerale
- Tuberculum minor et major
- Tend. bicipitis
- Acromion
- Spinae scapulae
- Margo medialis scapulae
- Angulus inf. scapulae.

# Case



# Red flags



## ■ Dangerous

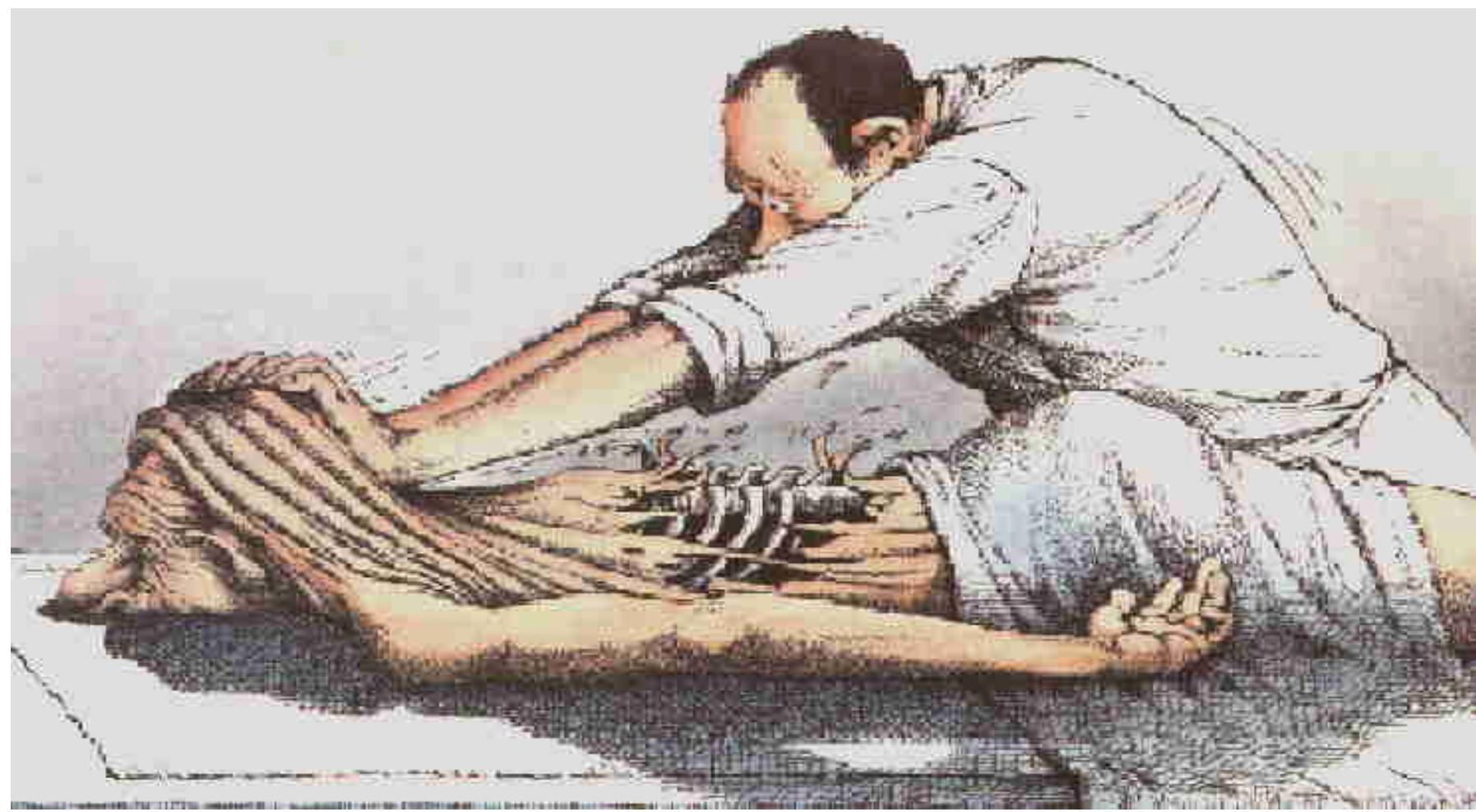
- Infection
- Neoplasm
- System disease

## ■ Acute

- Fracture
- Luxsation
- Vessel-/nerve lesion

# Injuries & syndromes

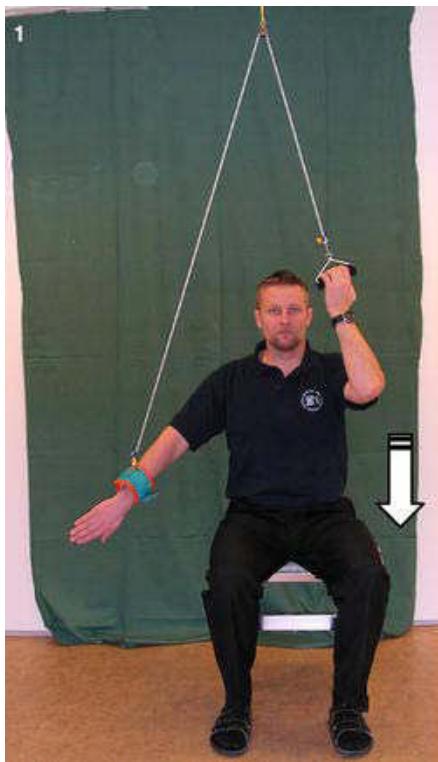
- Muscle
- Tendon
- Bursae
- Ligament
- Capsule
- Joint
- Nerve
- Bone





# Stretching

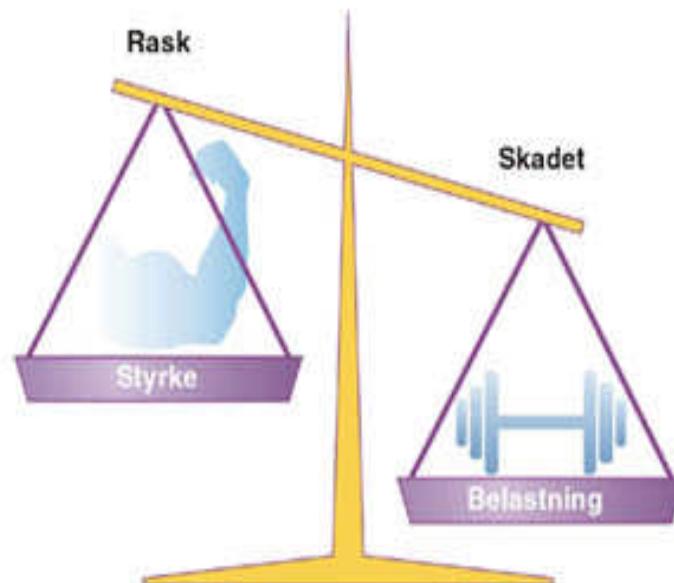
# Excentric exercise



# Overuse & overload

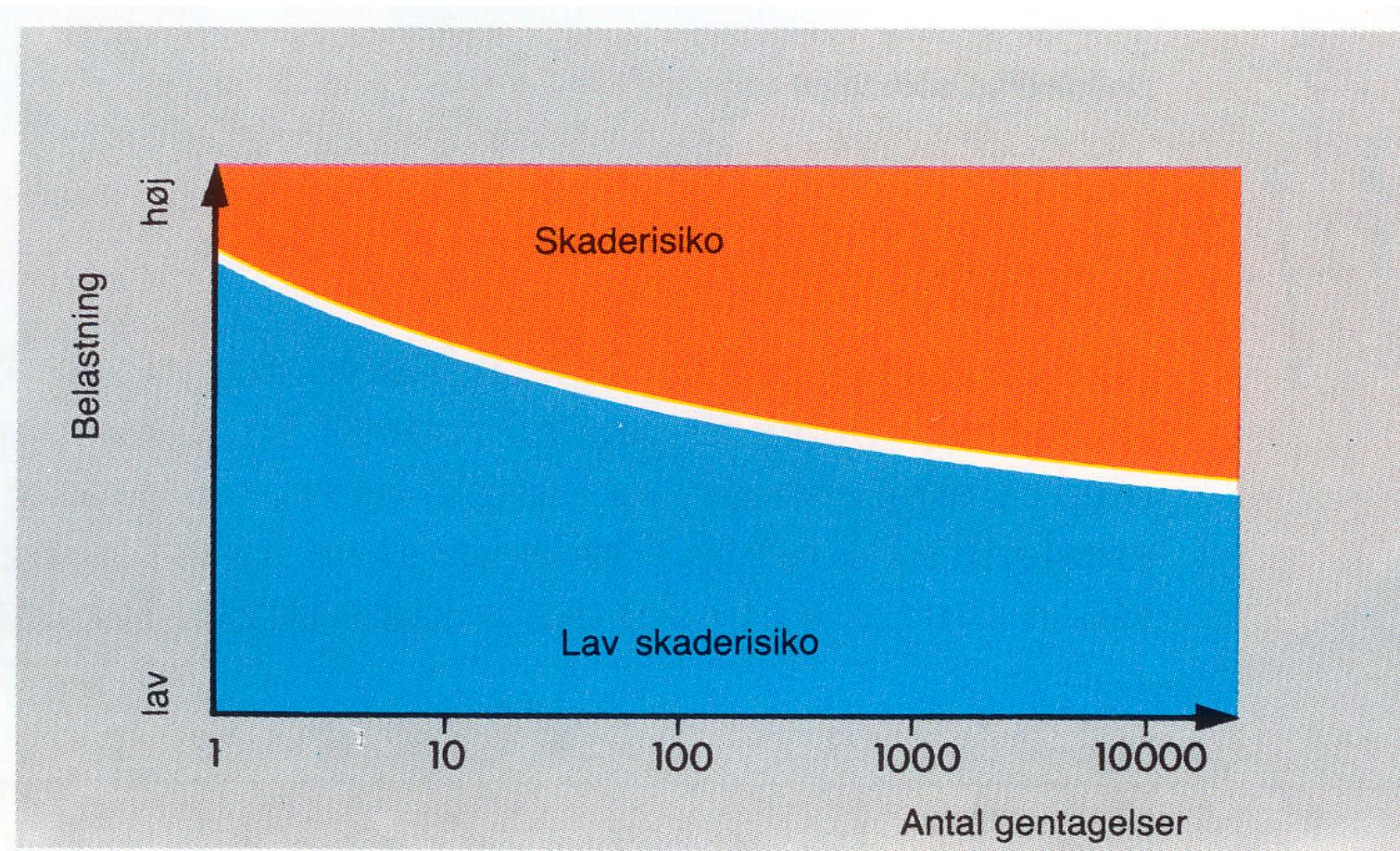
## Load vs. overload

?

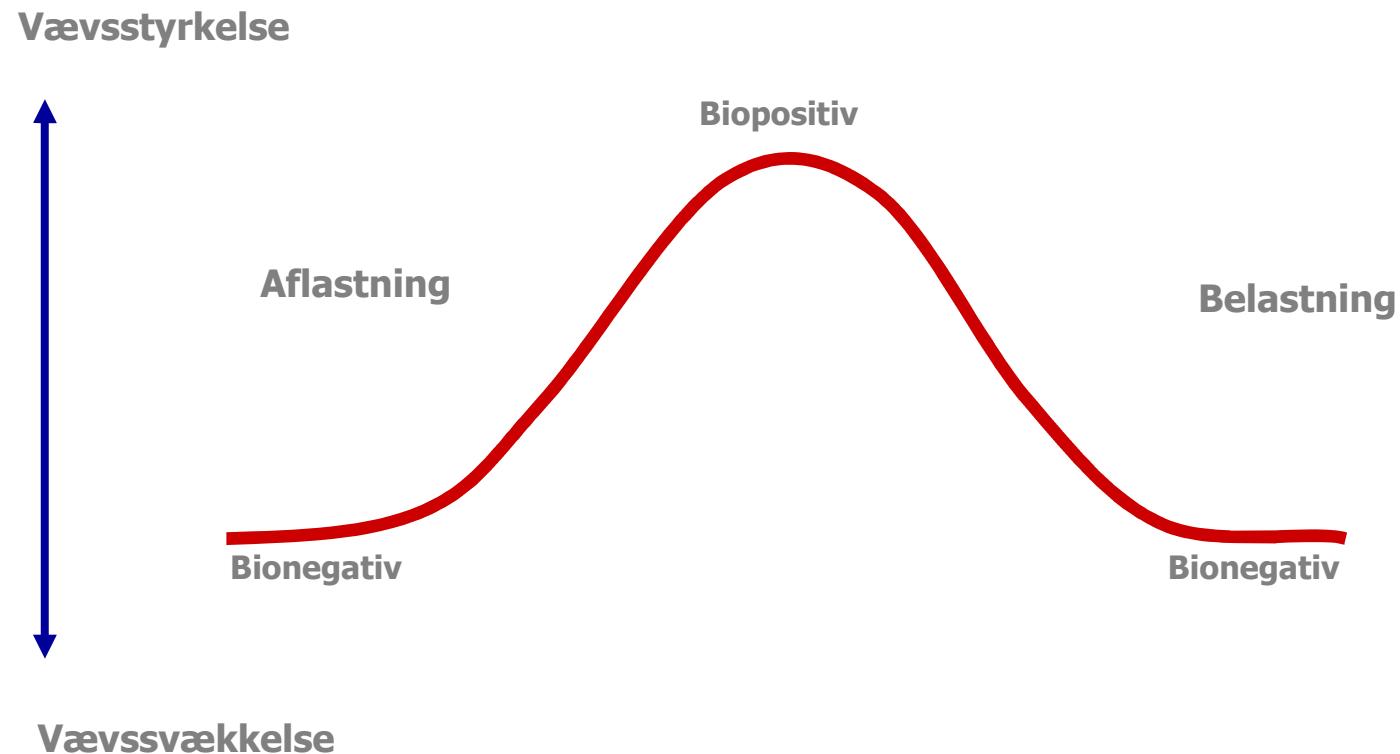


# Overuse & overload

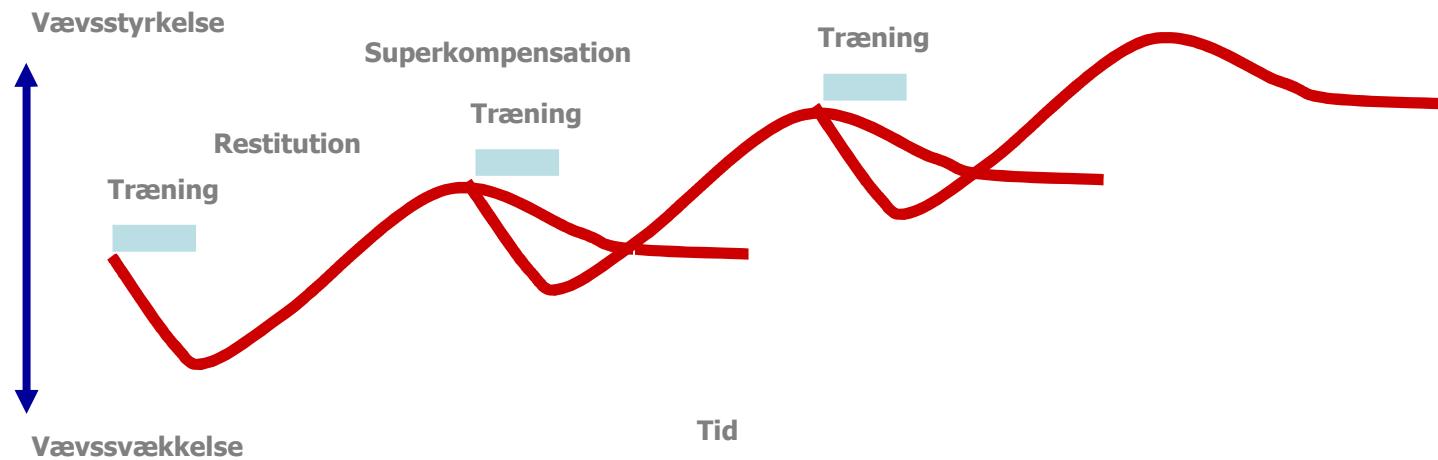
## Tissue damage



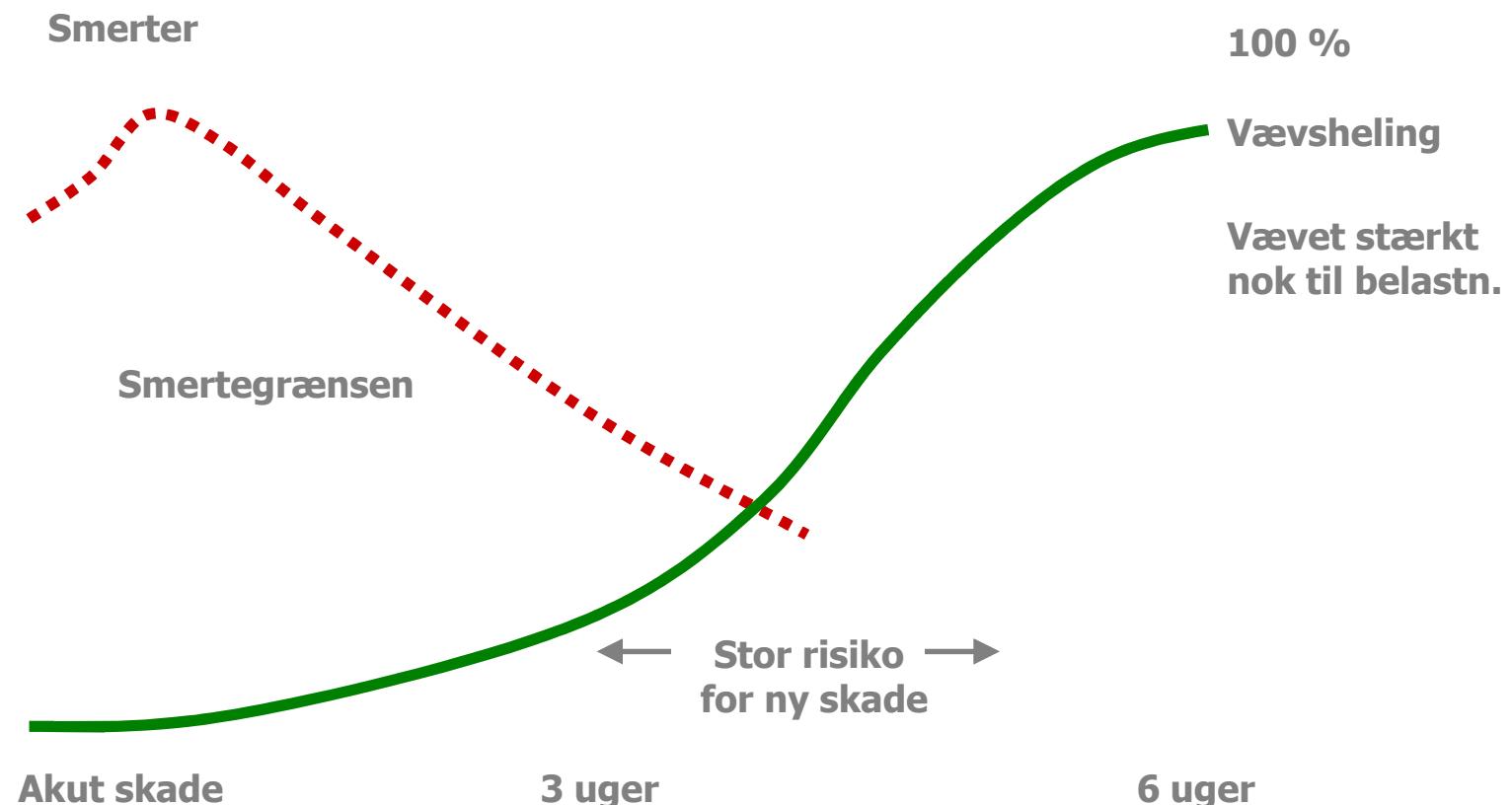
# Tissue adaptation



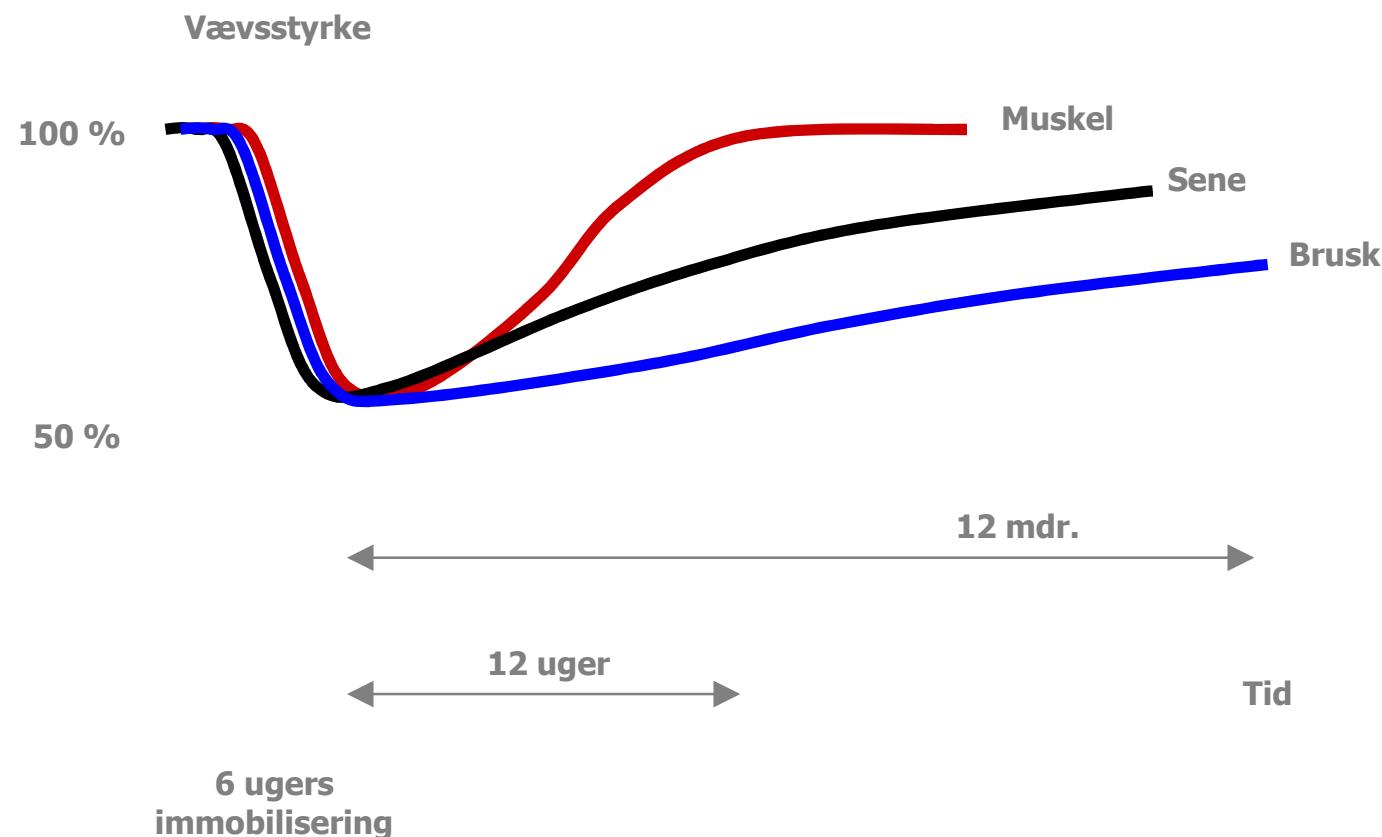
# Tissue adaptation



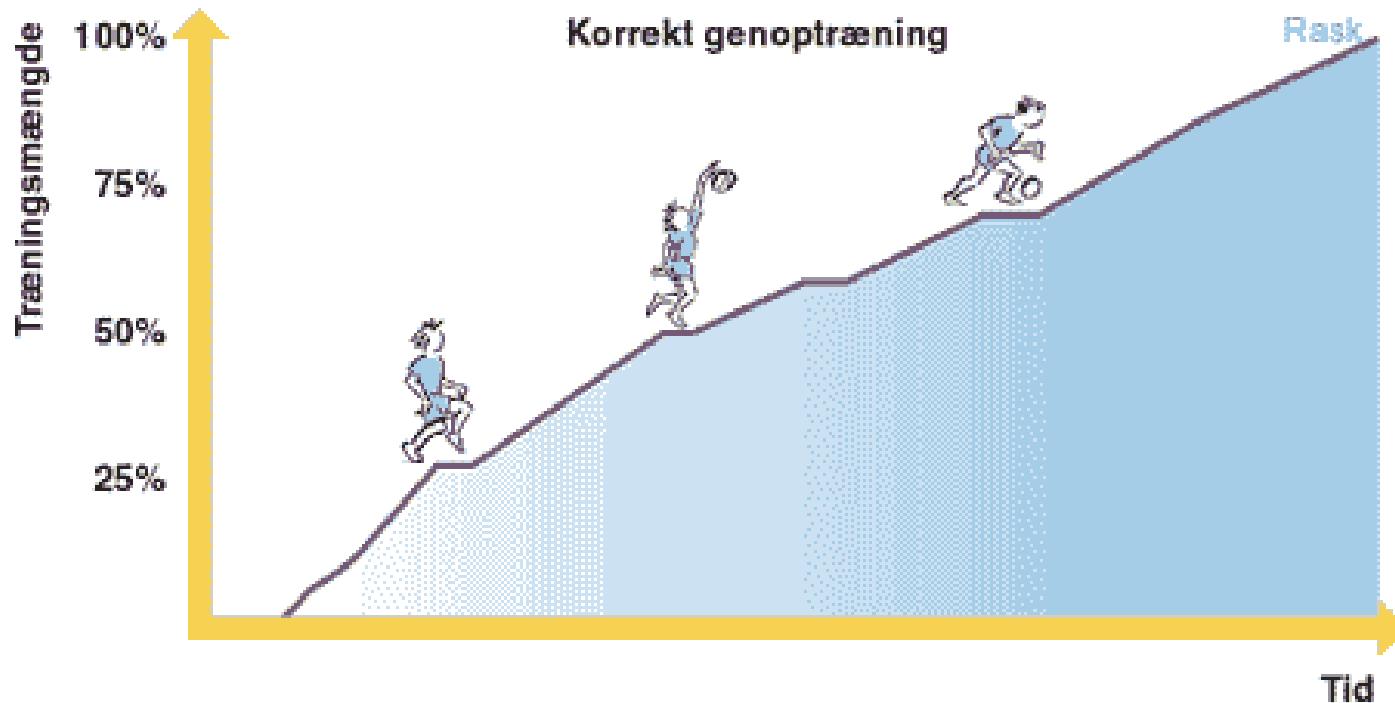
# Acute injury



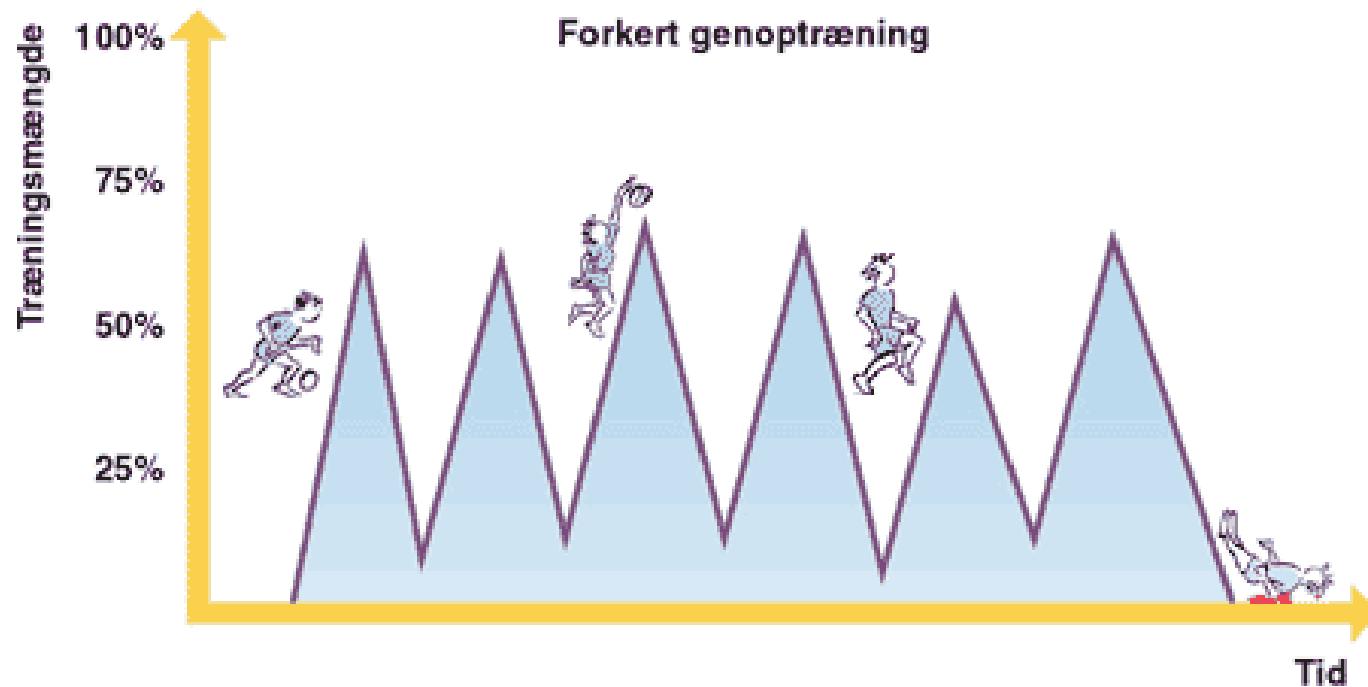
# Tissue adaptation



# Tissue adaptation



# Tissue adaptation



# Skader & syndromer

