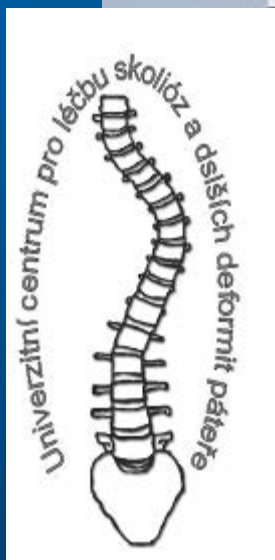


# Osteoporosis

Ivan Müller



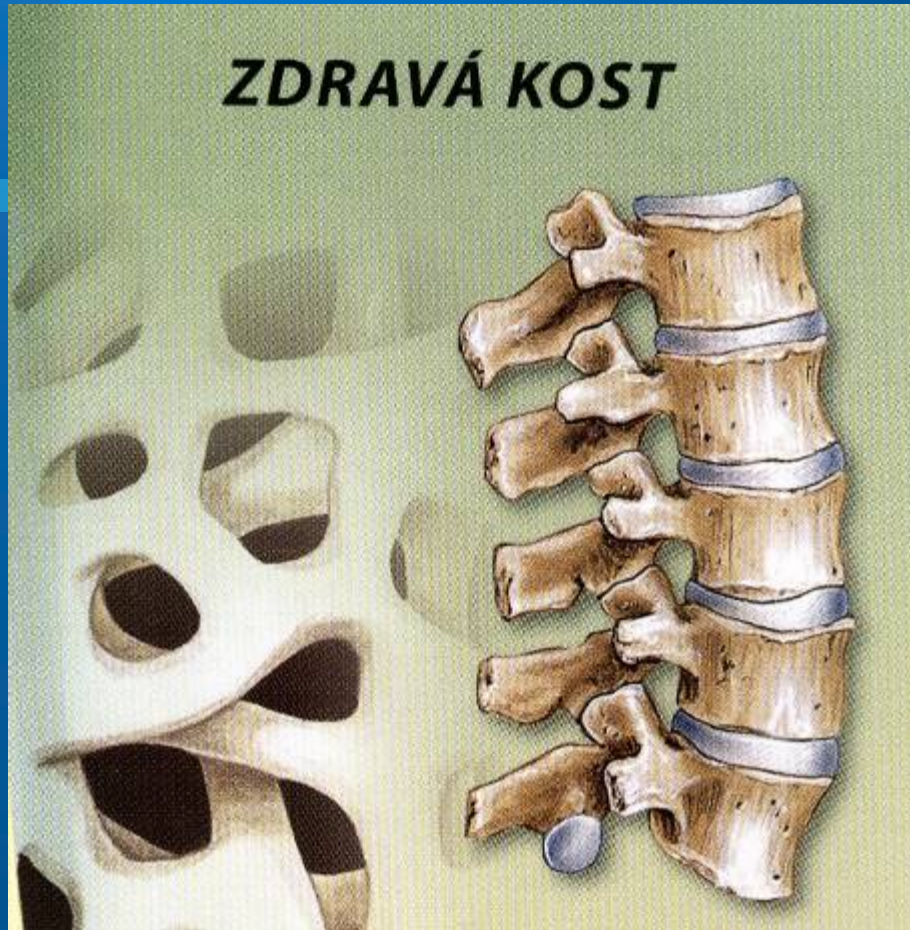
Orthop. Univ. Dept. FN Brno



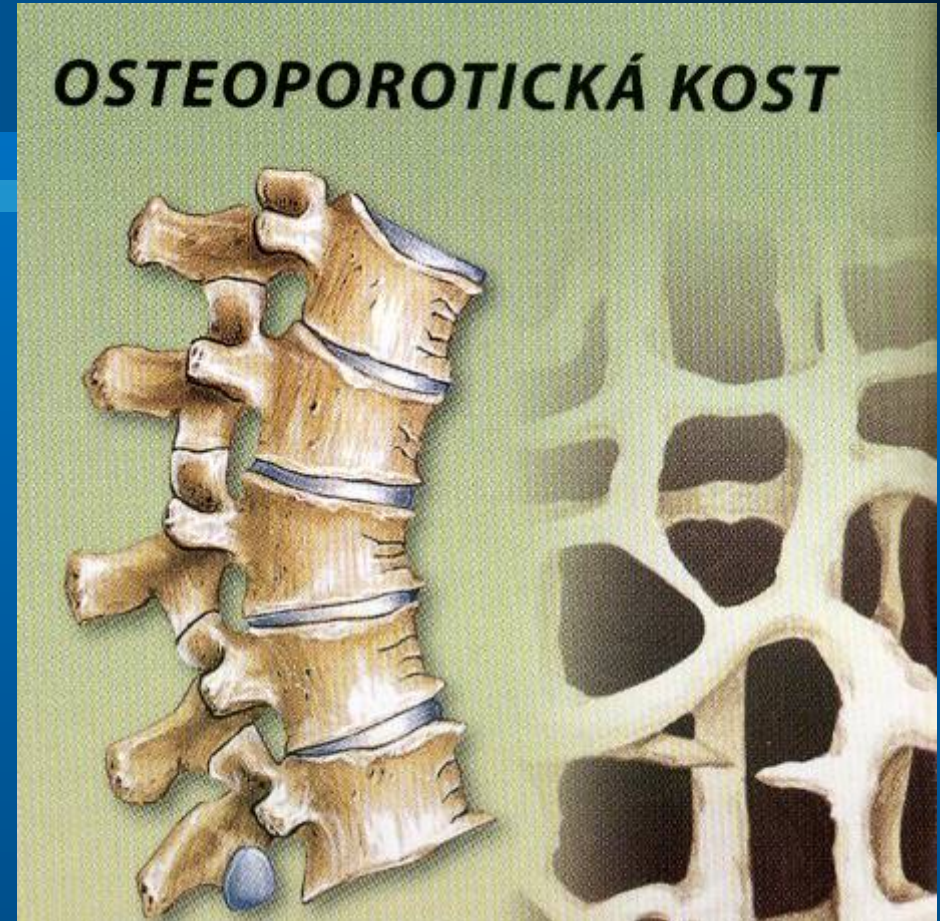
# Osteoporosis („silent bone thief“)

Systemic metabolic disease  
characterized by decreasing of bone  
mass and disorder of bone  
microarchitecture with pathological  
fractures (WHO)

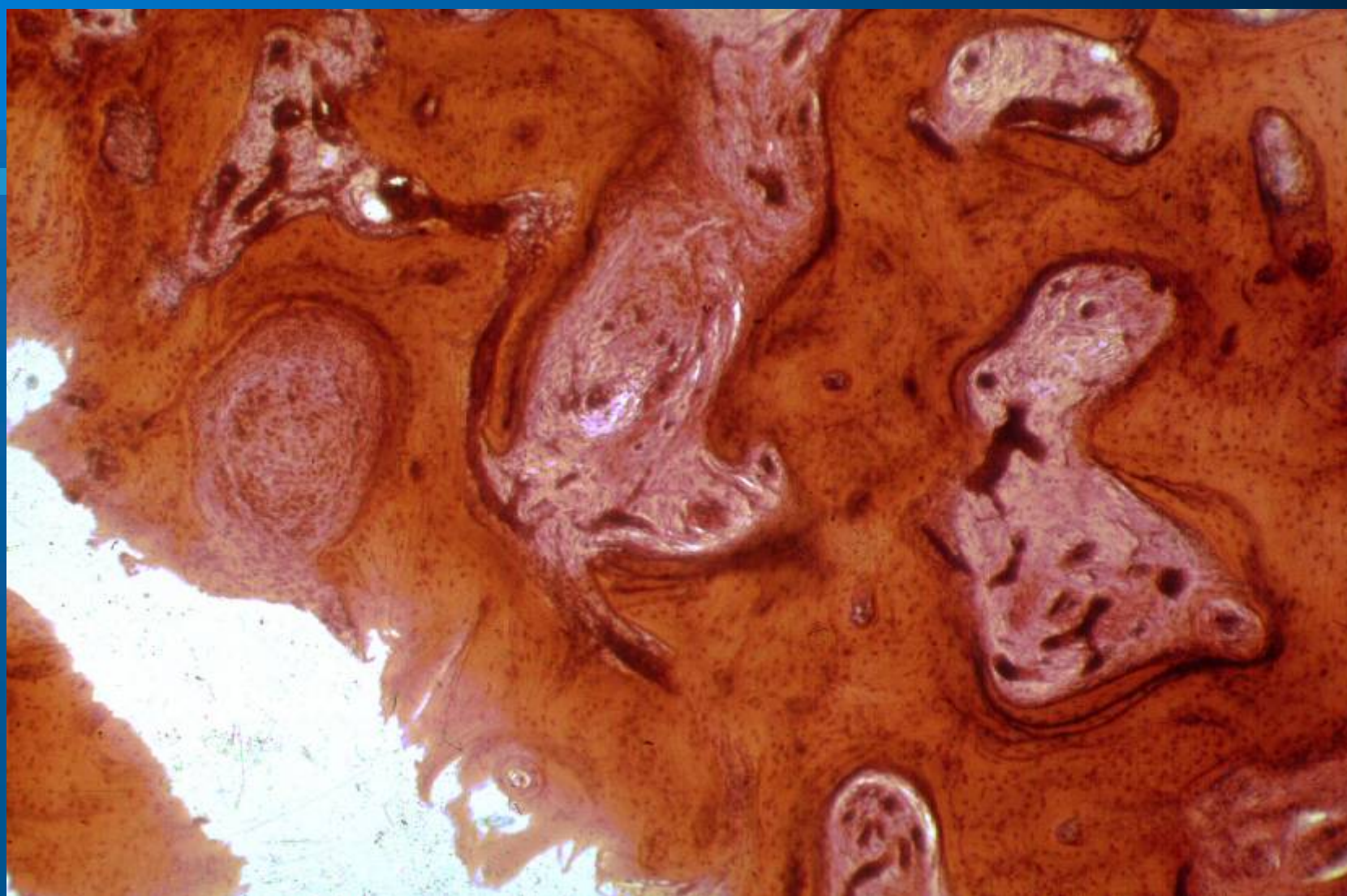
# Healthy bone



# Osteoporotic bone











# Occurrence

- Every 3rd woman and 6th male (Caucasian, Asian) above 60 yrs
- Increasing number of femoral neck fractures during 20 years + 33%
- Czech Republic: 10 904 these fractures in 1992

# Risk factors

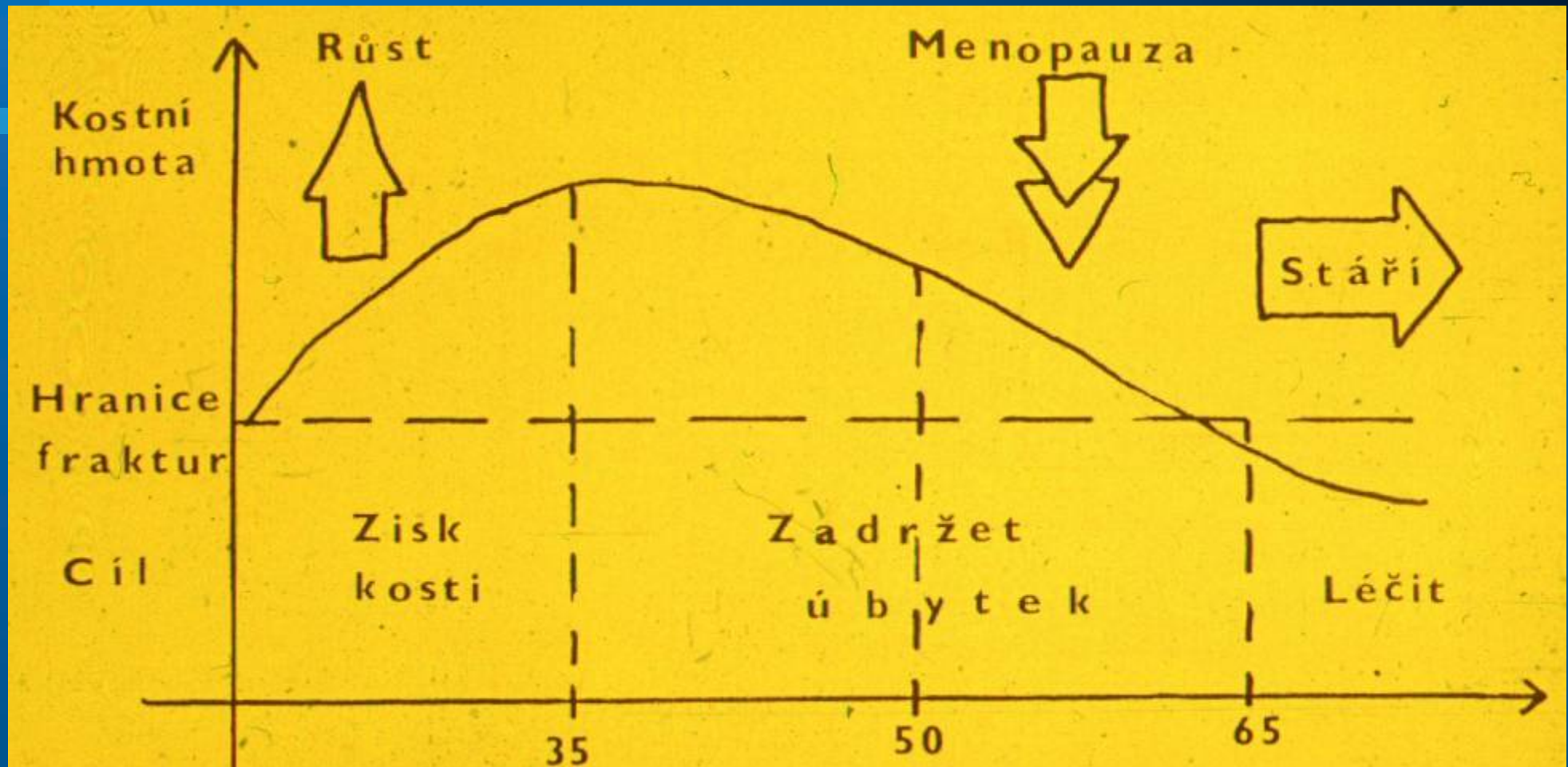
- genetic (60%, Caucasian and Asian, women)
- Quality of body, tissues (thinness-low BMI, small figure)
- Life style (hypomobility)
- Dysmenorea-disorders of menstruation-emmeniopathy
- Other disorders (GIT, thyroid gland)
- medication - drugs, tobacco, alcohol



# Skeletal evolution

- to 35. yrs prevalence of bone production
- involution
- menopausa (bone loss of 6% / year)

Bone mass ..increasing.. ...Stop bone loss... Elderly ...



Treat



# Osteoporosis

- primary - I. type (post menopausal)  
II. type (elderly)  
juvenile
- secondary - hormonal  
drugs - corticosteroids  
nutritional disorders  
other disorders

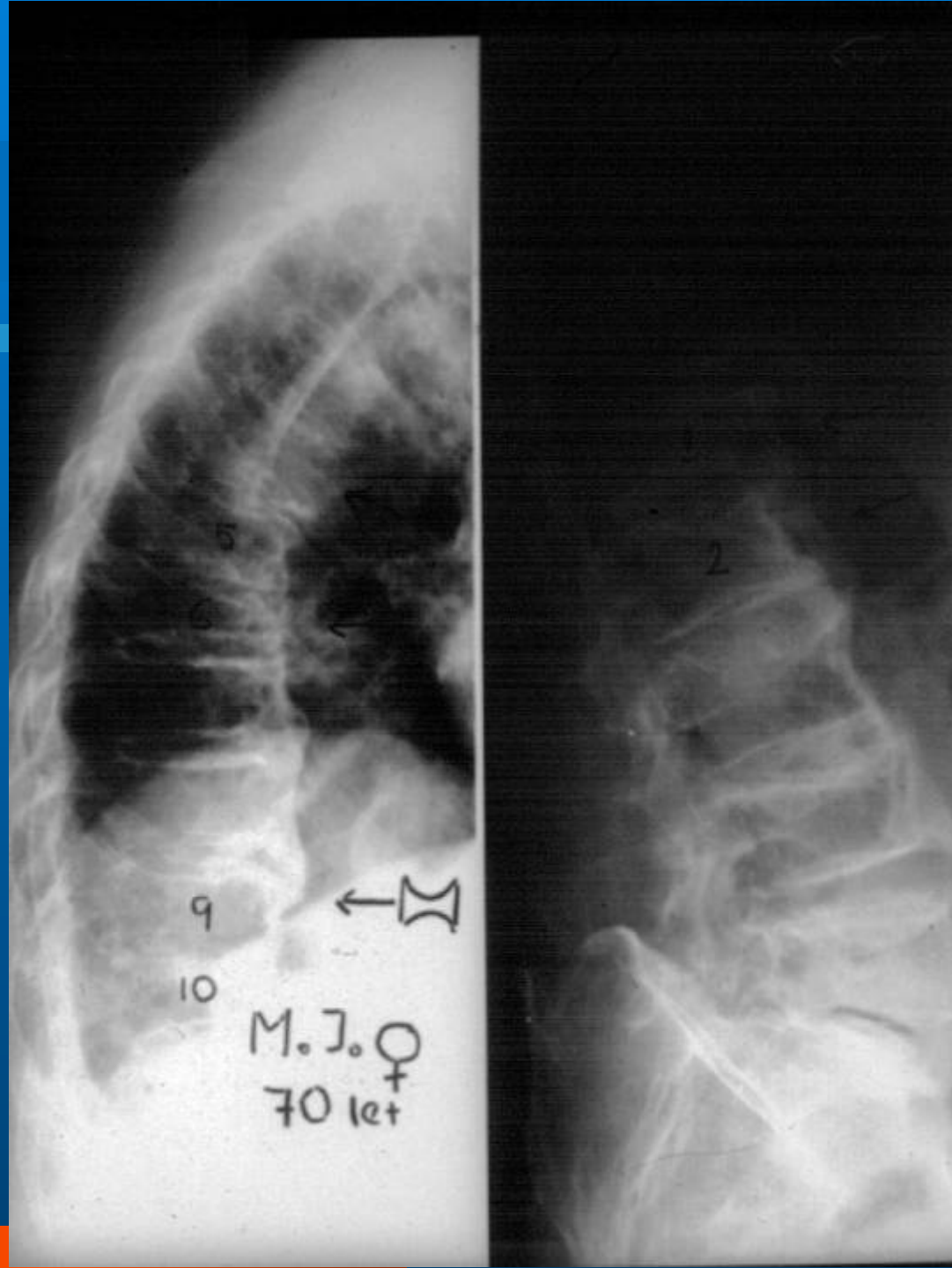
# Osteoporosis symptoms

- Stress (load) pain of spine and extremities
- Trunk shortening and round back
- Reflex skin, fasciae, muscles changes
- Pathological fractures



# Examination

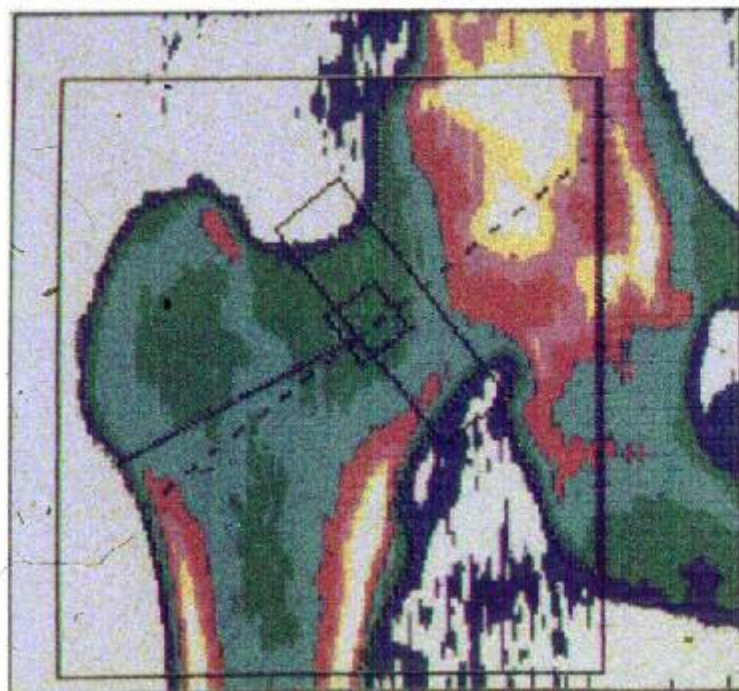
1. medical (anamnesis, physical exam.)
2. Laboratory (blood, urine)
3. Bone density
4. Radiological methods
5. Bone biopsy





# DENZITOMETRIE HOLOGIC 2000 QDR NZZ BRNO

k = 1.229 d0 = 122.8(1.000H) 5.526



17.Feb.1995 16:09 [94 x 104]  
Hologic QDR-2000 (S/N 2369)  
Array Right Hip Medium U4.59A:1

F0217952B Fri 17.Feb.1995 15:44

Name:

Comment: osteoporosa

I.D.: 436115/411 Sex: F

S.S.#: - - Ethnic: W

ZIPCode: 111 Height: 170.00 cm

Scan Code: LH Weight: 63.00 kg

BirthDate: 15.Nov.43 Age: 51

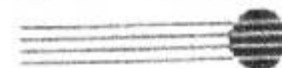
Physician: DR.KULHANK.

Image not for diagnostic use

TOTAL BMD CV 1.0%

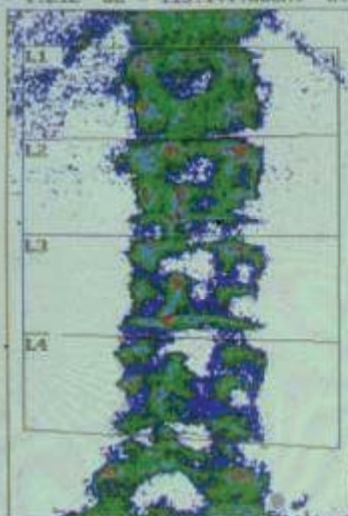
C.F. 0.992 1.007 1.000

Region	Est.Area (cm <sup>2</sup> )	Est.BMC (grams)	BMD (gms/cm <sup>2</sup> )
Neck	4.95	2.89	0.584
Troch	13.82	8.78	0.635
Inter	20.67	18.83	0.911
TOTAL	39.45	30.50	0.773
Ward's	1.12	0.53	0.472
Midline	(104,116)-( 28, 56)		
Neck	49 x 15	at [-24, 14]	
Troch	-10 x 47	at [ 0, 0]	
Ward's	11 x 11	at [-6, 8]	



# DENZITOMETRIE HOLOGIC 2000 QDR NZZ BRNO

k = 1.212 38 = 115.1(1.0880) 6.950



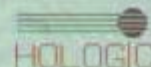
14.Nov.1994 11:16 (113 x 145)  
Hologic QDR-2000 (S/N 2369)  
Array Spine Medium 04.590:1

F11149415 Mon 14.Nov.1994 11:03  
Name: [REDACTED]  
Comment: osteoporosa  
I.D.: 335628/438 Sex: F  
S.S.#: - Ethnic: W  
ZIPCode: 111 Height: 178.88 cm  
Scan Code: LH Weight: 65.88 kg  
BirthDate: 28.Jun.33 Age: 61  
Physician: DR.MULLER  
Image not for diagnostic use

TOTAL BMD CV FOR L1 - L4 1.8%

C.F. 8.992 1.887 1.888

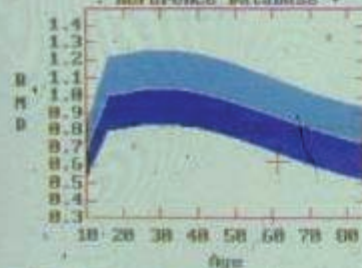
Region	Est.Area (cm <sup>2</sup> )	Est.BMC (grams)	BMD (gms/cm <sup>2</sup> )
L1	13.12	7.76	0.592
L2	14.49	9.42	0.658
L3	15.68	9.13	0.582
L4	17.43	11.13	0.639
TOTAL	60.72	37.44	0.617



# DENZITOMETRIE HOLOGIC 2000 QDR NZZ BRNO

A Lumbar Spine

Reference Database \*



BMD(L1-L4) = 0.617 g/cm<sup>2</sup>

Region	BMD	T(30.8)	Z
L1	0.592	-3.83 64%	-1.78 76%
L2	0.658	-3.44 63%	-1.96 75%
L3	0.582	-4.56 54%	-3.88 64%
L4	0.639	-4.34 57%	-2.73 68%
L1-L4	0.617	-3.91 59%	-2.41 78%

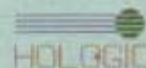
\* Age and sex matched

T = peak bone mass

Z = age matched

TK 04 Nov 91

F11149415 Mon 14.Nov.1994 11:03  
Name: Rihankova Květa  
Comment: osteoporosa  
I.D.: 335628/438 Sex: F  
S.S.#: - Ethnic: W  
ZIPCode: 111 Height: 178.88 cm  
Scan Code: LH Weight: 65.88 kg  
BirthDate: 28.Jun.33 Age: 61  
Physician: DR.MULLER





# Treatment

1. Calcium 1 500 mg per day
2. Vitamin D 400 IU per day
3. Estrogens
4. SERM remedies (Raloxifen)
5. Bisphosphonates (Alendronate, Risendronate -  
T-score: -2,5 and less
6. Calcitonin
7. Anabolic hormones (elderly)

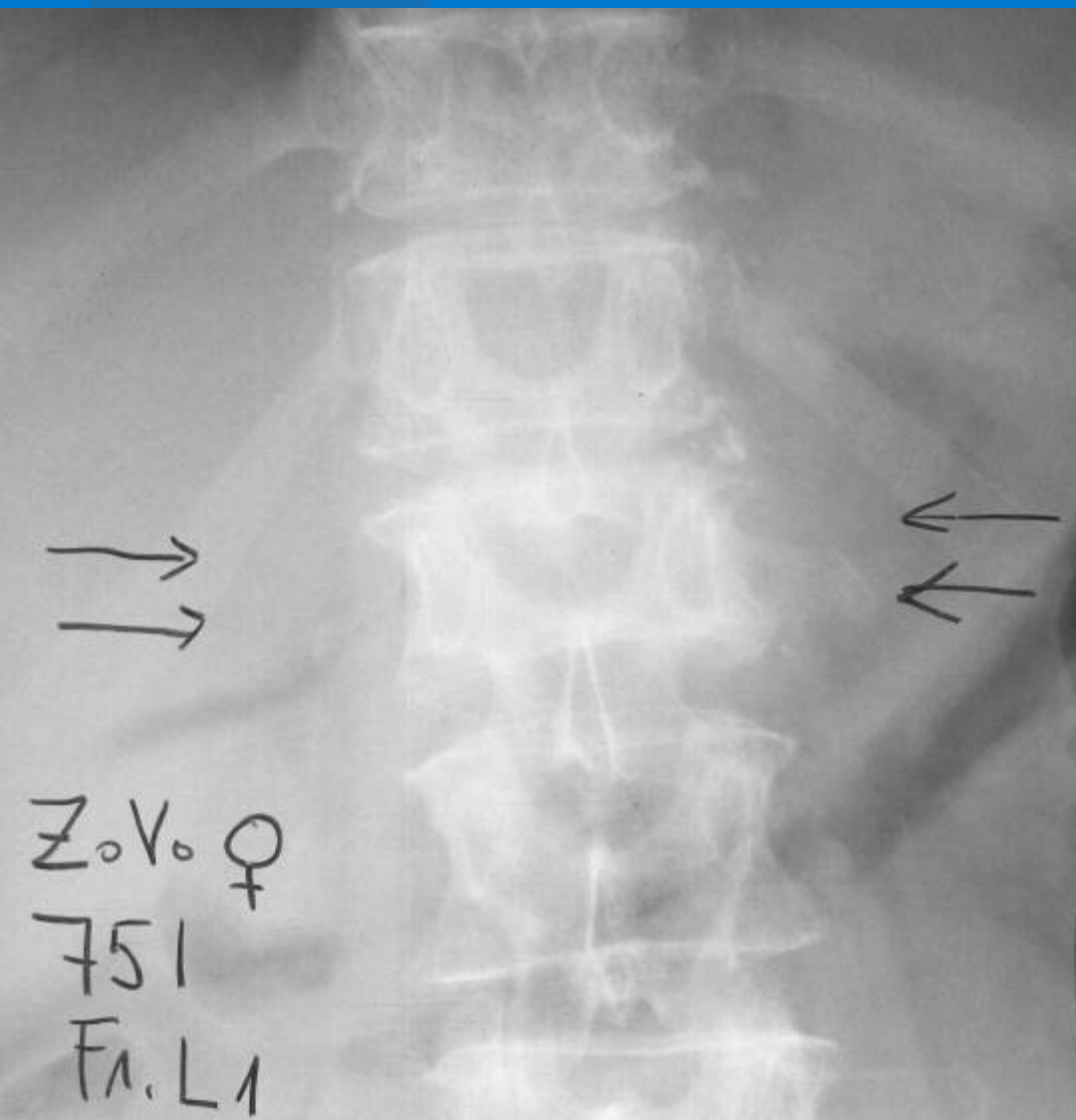
# Surgical management

- Fractures treatment – hip, wrist, proximal humerus, spine, pelvis, ankle, knee (3R)
- Treatment of posttraumatic deformities
- Vertebral kyfoplasty (bone cement)

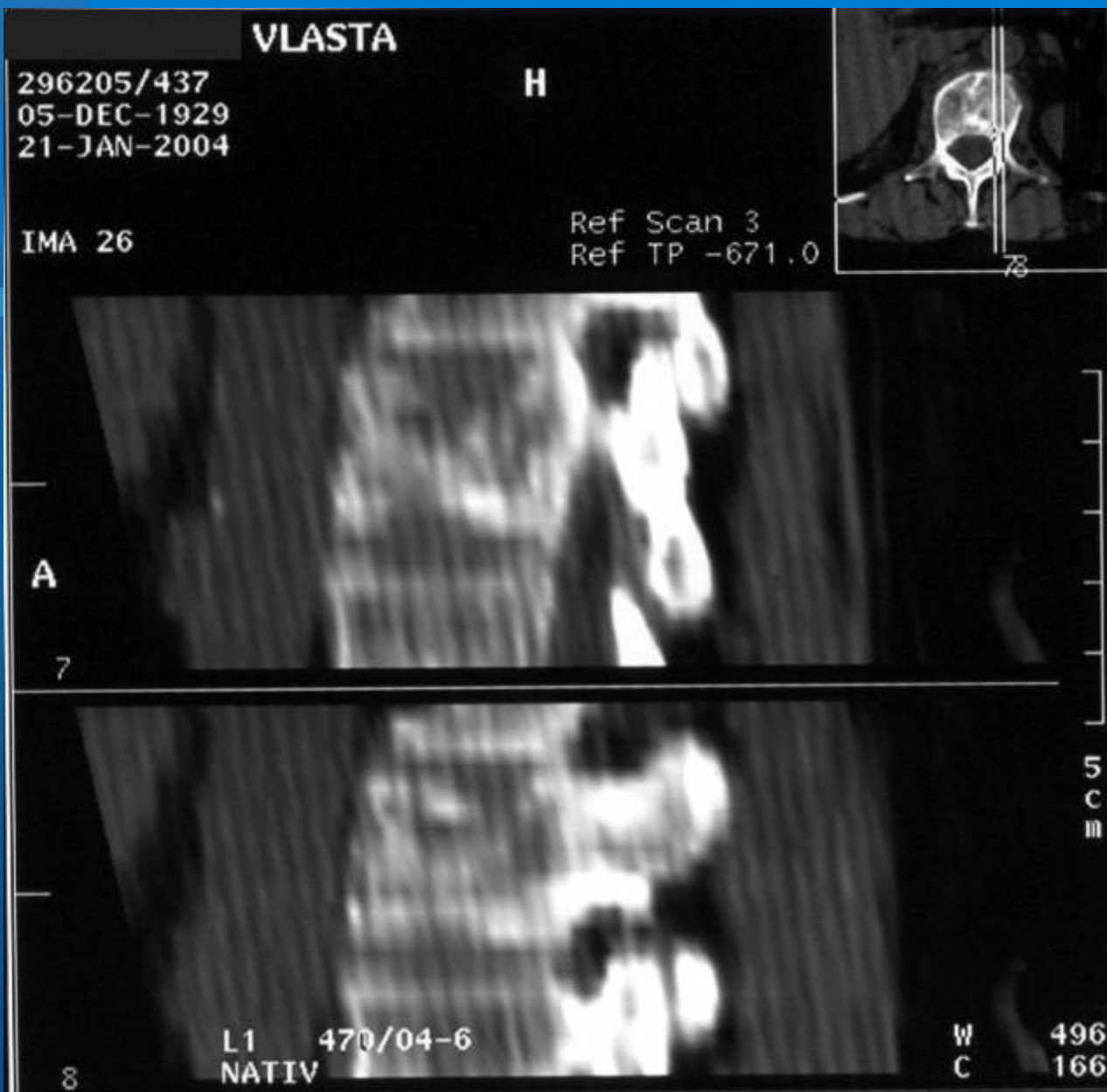












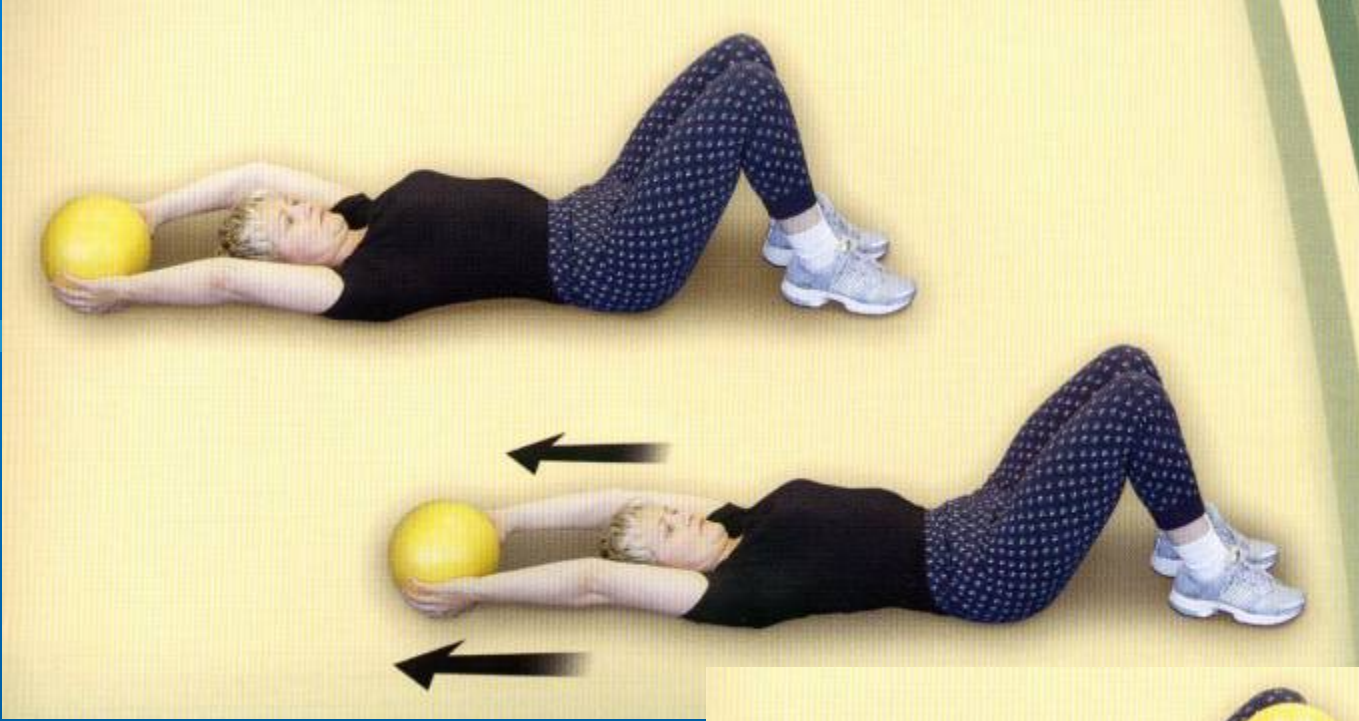
Z.V. ♀ 751.

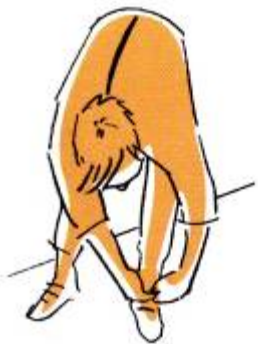






# Physiotherapy and orthotic management





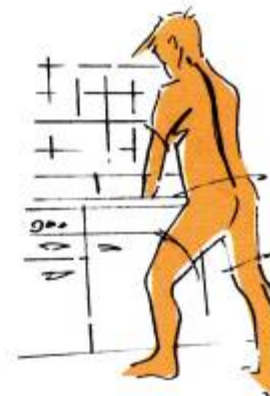
good



good



wrong



wrong



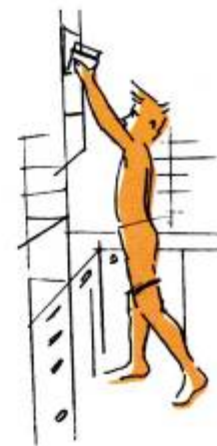
špatně



správně



špatně



správně







# Prevention

1. Primary (good skeletal evolution)
2. Secondary (osteoporosis treatment)
3. Terciary (technical arrangements against falls, fall prevention, physiotherapy, regeneration, “well-ness” programme - spas)













# General arrangements against osteoporosis

- diet
- motion regime (gait, dance)
- struggle against risks
- ergonomic arrangements

# Conclusion

Osteoporosis is consequential disease with predominant women occurrence, including fragility fractures. Everybody should adhere to regime approach, healthy life style. Early diagnosis and treatment are conditions for successful management of osteoporosis.

