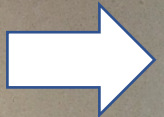
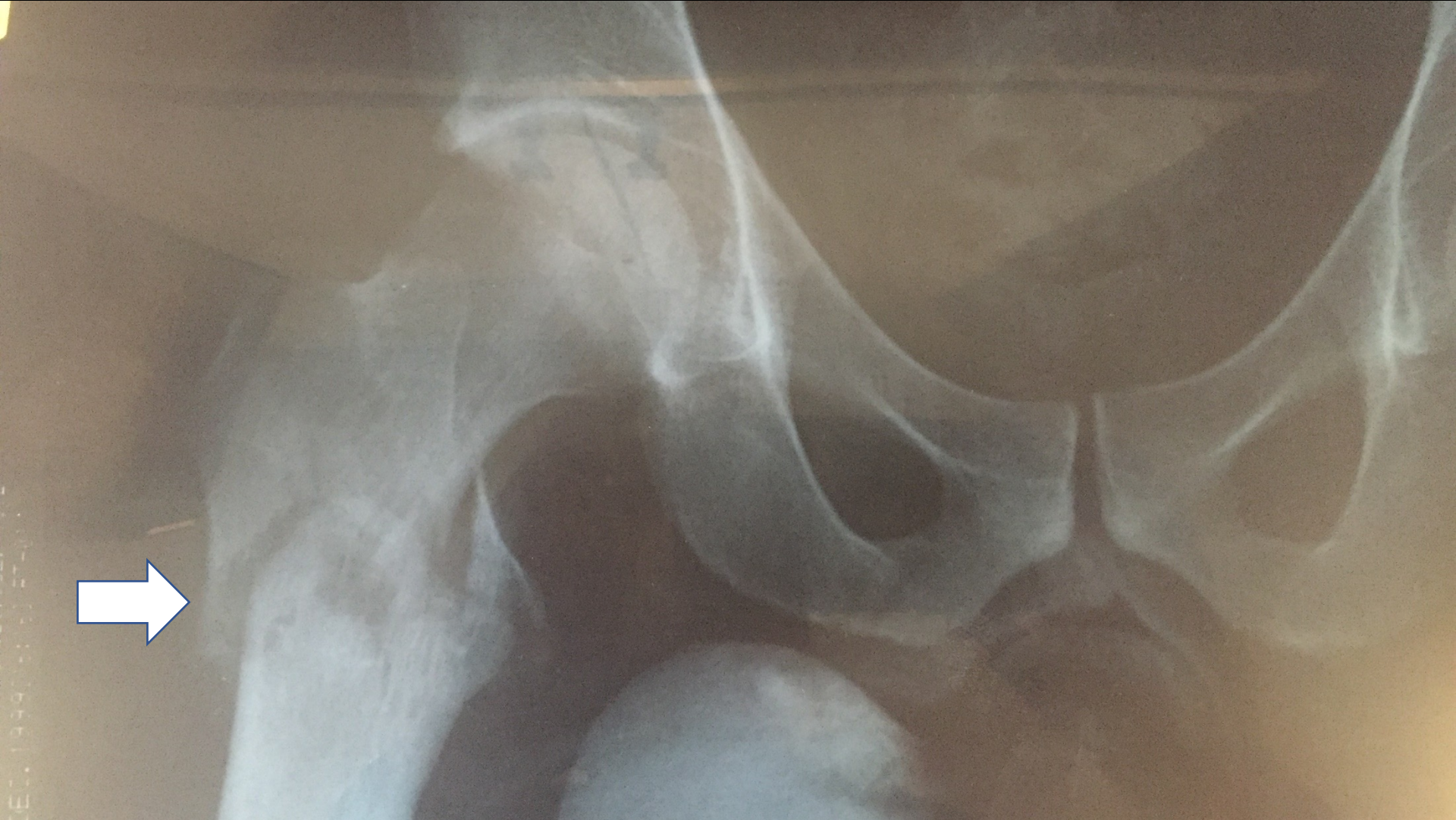


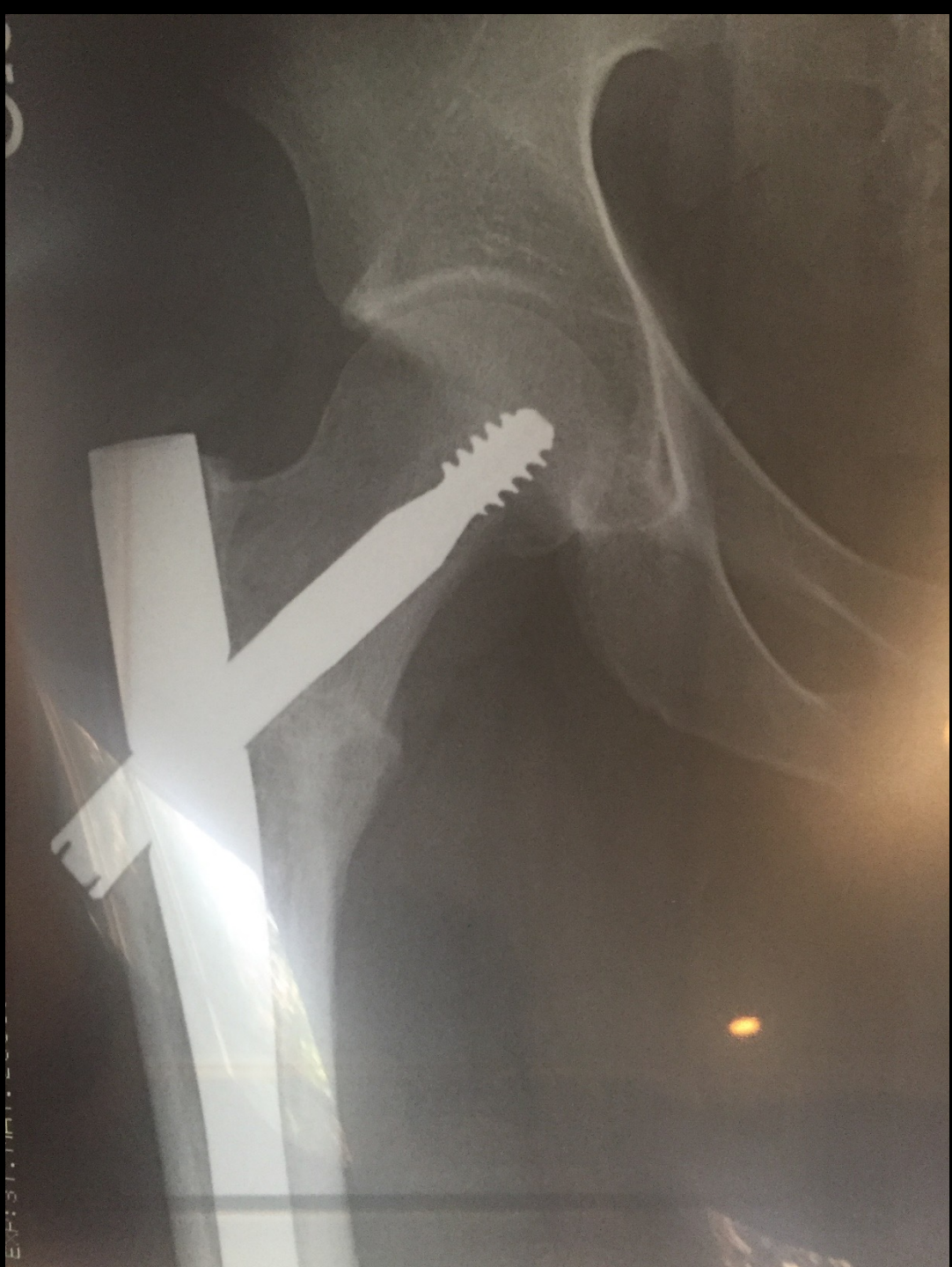


Preventing and Treating Osteoporosis

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EXIST, IRI, S

Prevention and Treatment of Osteoporosis

- Definitions
- Bone physiology
- Prevention
- Treatment
- Q&A

What is Osteoporosis?

- Decrease in the quantity or quality of bone which predisposes to fractures.
- Fragility fracture - occurs with energy equal to or less than a fall from standing height.
- Goal – prevent fragility fractures

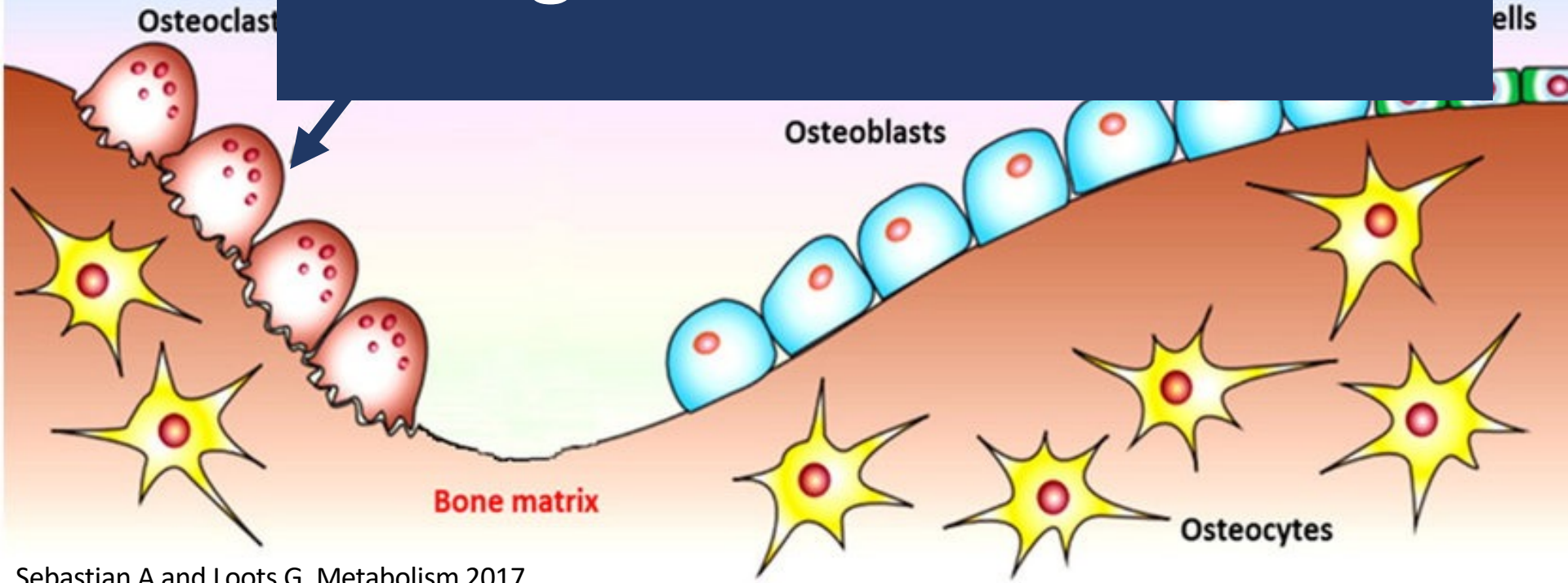
Bone is alive



Bone resorption

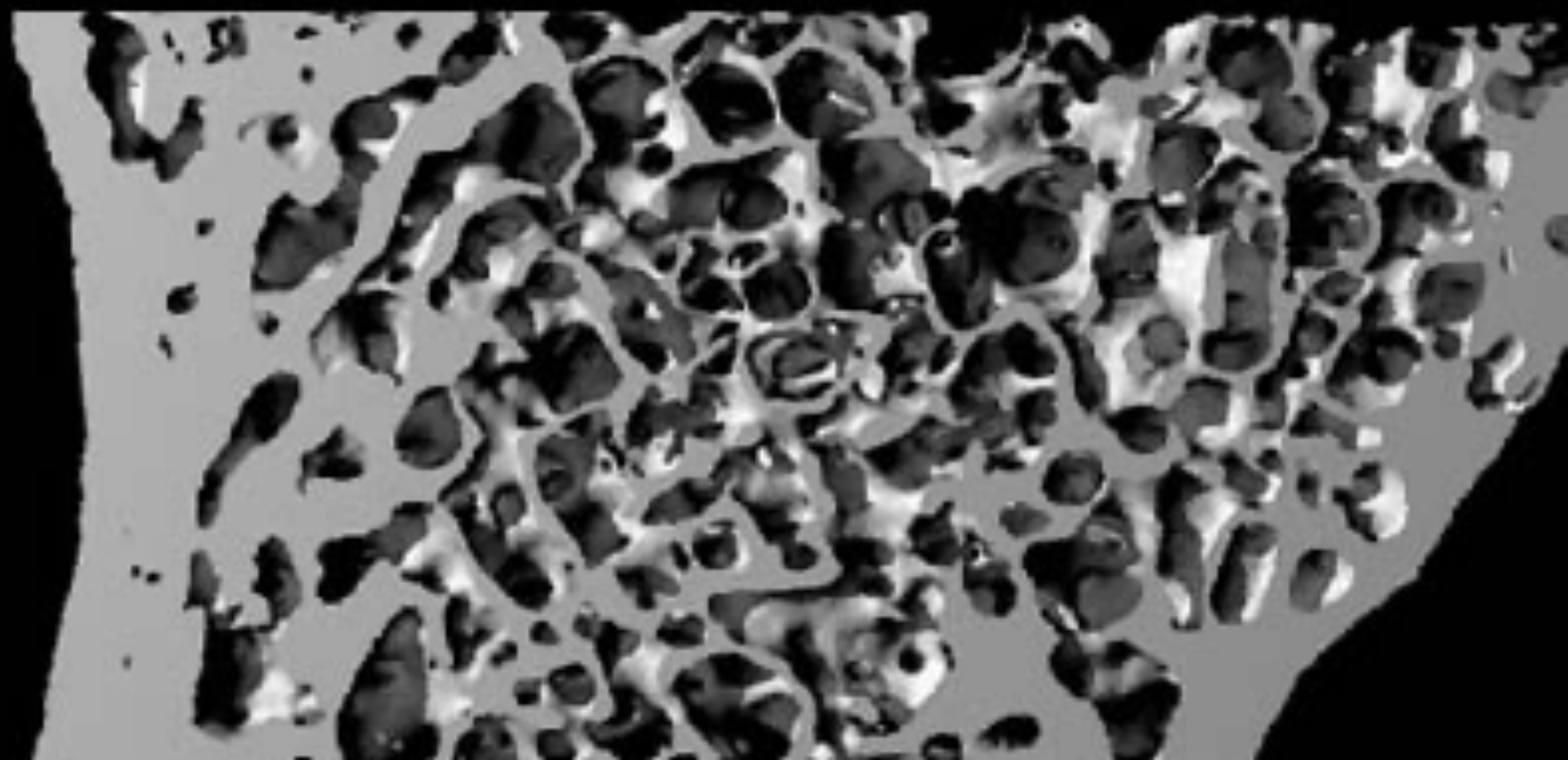
Bone formation

Estrogen inhibits osteoclasts

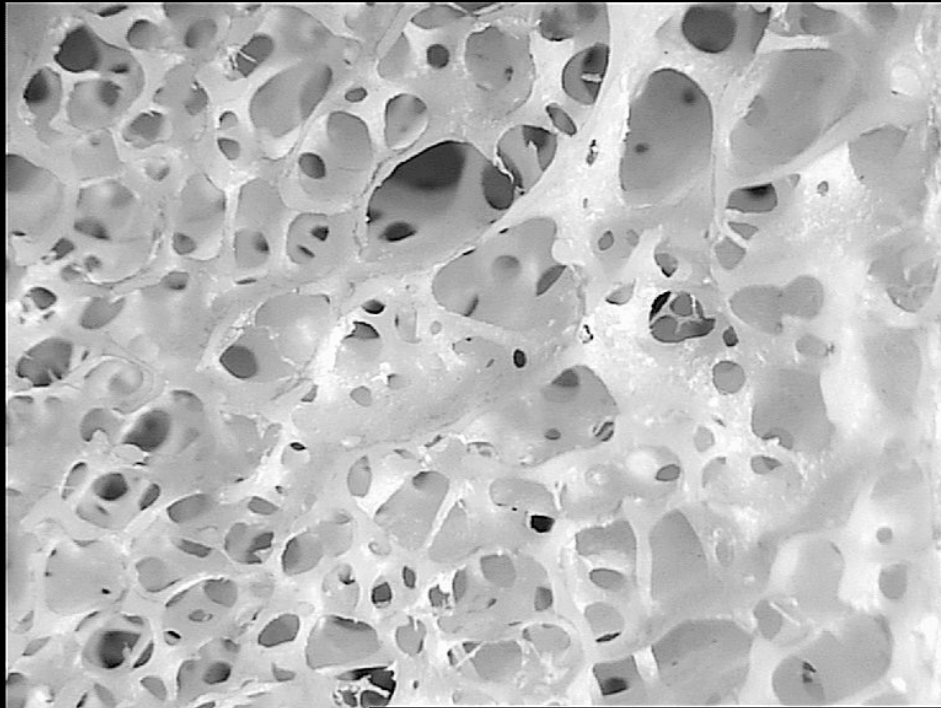


**Cortical
Bone**

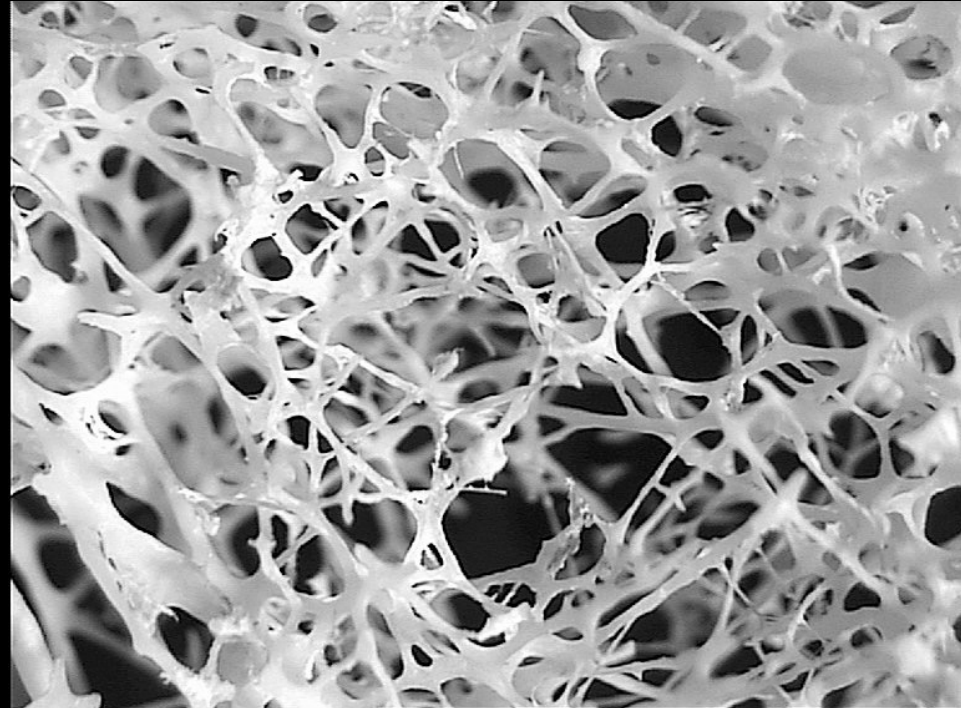
**Trabecular
Bone**



View of Bone Quality



54-year-old



74-year-old



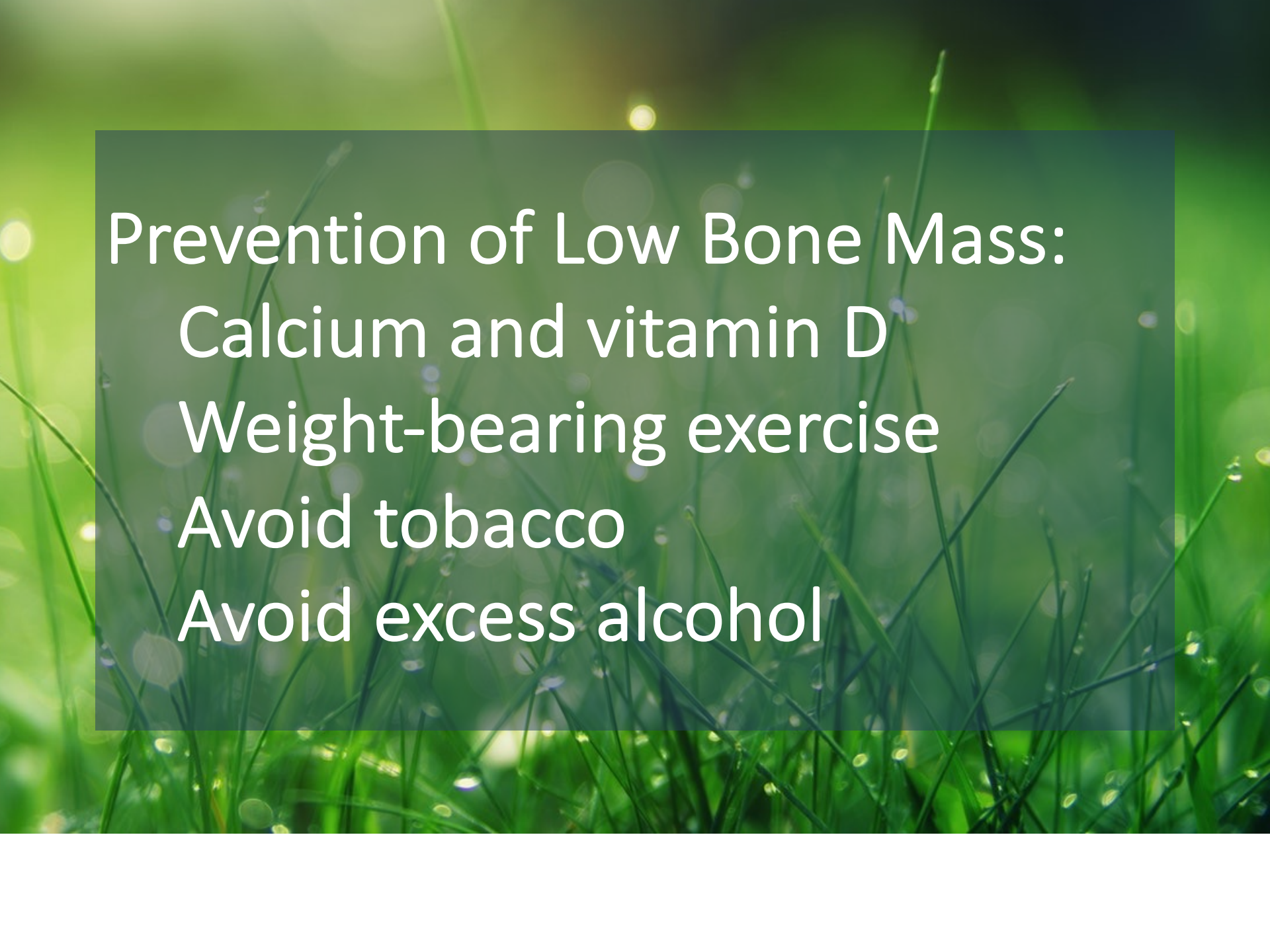
Fragility fractures
are bad

Consequences of Fragility Fractures


- Pain, disability, loss of function, reduced lung function, increased mortality
- Hip fracture
 - 12-20% mortality in 2 years after hip fracture
 - 50% of survivors of hip fracture unable to return to independent living

Prevention of Fragility Fractures

- Prevention of low bone mass
- Prevention of falls & frailty

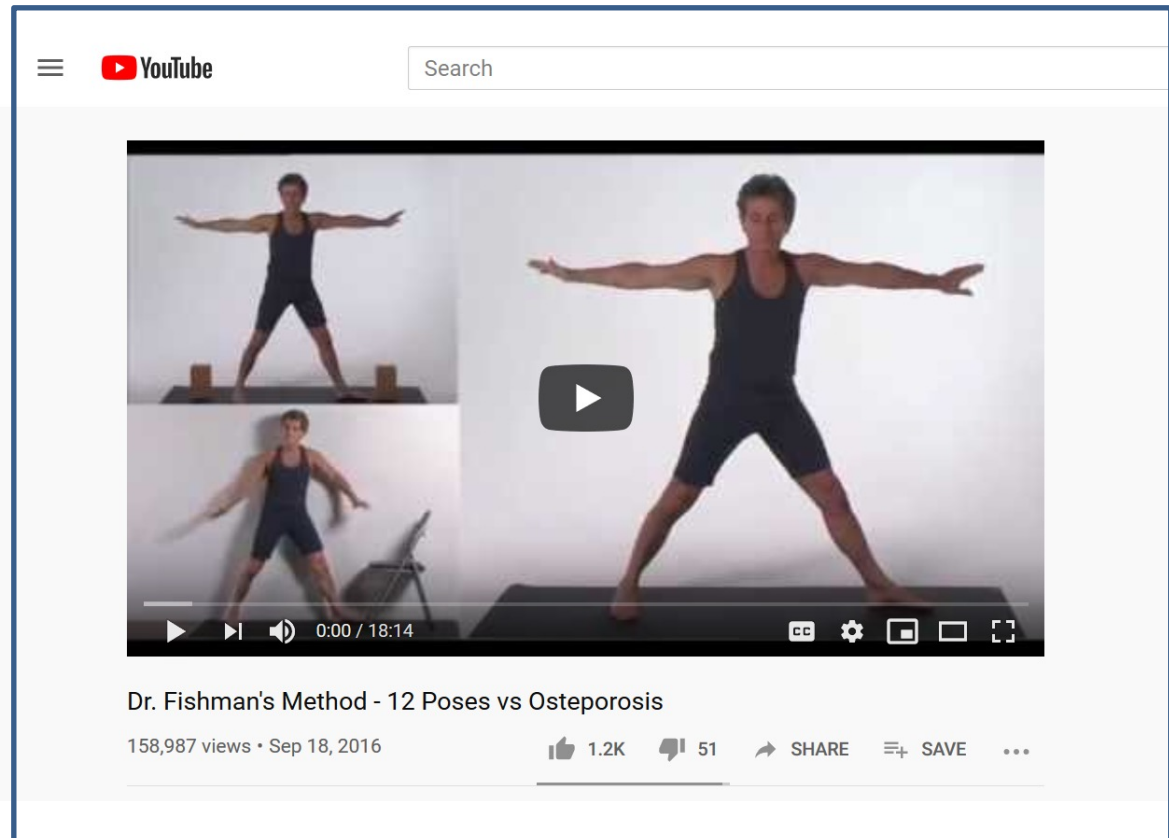


Prevention of Low Bone Mass:
Calcium and vitamin D
Weight-bearing exercise
Avoid tobacco
Avoid excess alcohol



Prevention of Falls & Frailty:
Maintain muscle mass
protein, strength training
Maintain balance
Safe environment

Fishman Method Yoga



Jeanette Burney PT – Body in Tune
(www.bodyintuneboulder.com)

What about OsteoStrong?



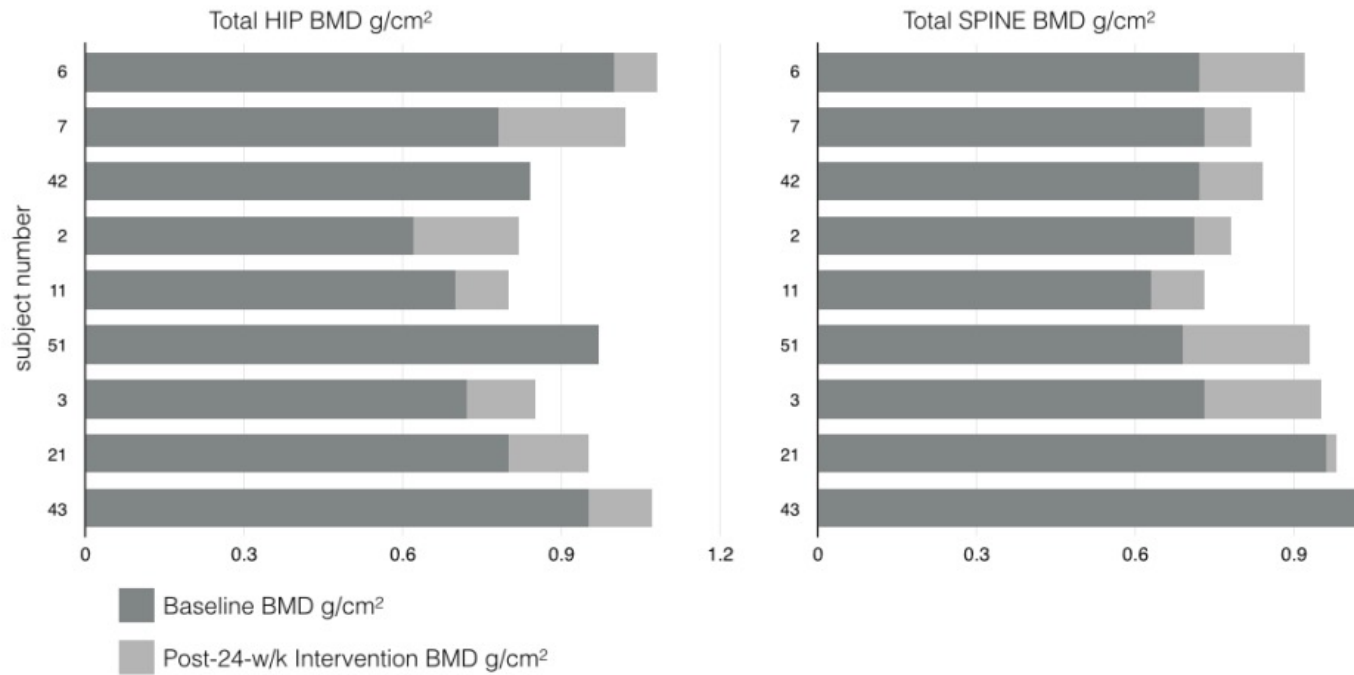


Chart 3: BMD randomized subgroup measures baseline-post.

Jaquish J et al., J Osteopor Phys Act 2015;Vol 3:Iss 3

Diagnosis of Osteoporosis

- Presence of fragility fracture
 - Even when bone density is not low
- DXA (bone density test)
 - T-score of -2.5 or below
 - T-score of -1.0 to -2.5 with high fracture risk by FRAX score

Who should have a DXA scan?

- Women age 65 and older
- Men and younger women with increased risk of fracture*
 - Family history of osteoporosis/hip fracture
 - Steroid therapy
 - Estrogen blocking medication
 - Low body weight
 - Condition associated with increased risk (early menopause, low T, diabetes, etc.)



Fragility fractures are preventable

Treatment of Osteoporosis

- Everything we just learned about prevention still applies
 - Calcium and vitamin D
 - Weight bearing exercise
 - Avoid tobacco and excess alcohol
 - Maintain muscle mass and balance
 - Safe environment
- Medications to reduce fracture risk*

Laboratory Evaluation

Low Bone Mass: Treatable causes of bone loss

(Vitamin D, parathyroid, celiac, thyroid, urinary calcium loss, poor calcium absorption, etc.)

Fracture Risk

Assess Risk:

History of fragility fracture

Parent with hip fracture

Bone density (DXA)

Bone quality (TBS)

FRAX score

FRAX Score

FRAX[®] Fracture Risk Assessment Tool

[Home](#)[Calculation Tool](#)[Paper Charts](#)[FAQ](#)[References](#)[English](#)

Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

Country: **US (Caucasian)**Name/ID: [About the risk factors](#)

Questionnaire:

1. Age (between 40 and 90 years) or Date of Birth

Age:

Date of Birth:

Y: M: D:

2. Sex

 Male Female

3. Weight (kg)

4. Height (cm)

5. Previous Fracture

 No Yes

6. Parent Fractured Hip

 No Yes

7. Current Smoking

 No Yes

8. Glucocorticoids

 No Yes

9. Rheumatoid arthritis

 No Yes

10. Secondary osteoporosis

 No Yes

11. Alcohol 3 or more units/day

 No Yes12. Femoral neck BMD (g/cm²)

T-Score

BMI: 23.4

The ten year probability of fracture (%)

**with BMD**

Major osteoporotic

24

Hip Fracture

4.8

If you have a TBS value, click here:



Weight Conversion

Pounds kg



Height Conversion

Inches cm

07437895

Individuals with fracture risk assessed since 1st June 2011

[Print tool and information](#)



Bone medications aren't as scary
as the internet says they are.

Who might benefit from medication?

Medications:

Consider if:

Prior fragility fracture

T-score below -2.5

FRAX risk > 3% hip, > 20% major

Low bone mass on steroid therapy

Osteoporosis Medications

Medications:

Decrease bone breakdown:

- bisphosphonates – alendronate, risedronate, zoledronic acid IV
- denosumab (Prolia)
- estrogen (\pm progesterone)*
- raloxifene (Evista)*
- calcitonin (Miacalcin)*



Rare risks: Osteonecrosis of jaw (ONJ) Atypical femoral fractures

Osteoporosis Medications

Medications:

Increase bone formation*:

- teriparatide (Forteo)
- abaloparatide (Tymlos)

Increase bone formation and decrease bone breakdown:

- romosozumab (Evenity)*

Osteoporosis Medications

Cost of
doing
nothing vs.
risk of side
effects



Case Study

- 67-year-old woman with advanced breast cancer
- History of multiple spine fractures, hip fracture, pelvis insufficiency fractures
- Zoledronic acid IV* stopped due to dental issues
- After evaluation, teriparatide (Forteo recommended)

Case Study

- She declined therapy because of fear of possible side effects
- Over the next 2 years she suffered 2 more painful spine fractures and pelvis insufficiency fracture
- Consented to start teriparatide

Case Study

1. Medications should be used like a tool
2. Properly chosen treatment can have powerful effects

The best time to plant a tree was 20 years ago, the second-best time is now.





Questions?

Thank You!

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Boulder Community Health



The Alpine Center
For Diabetes, Endocrinology and Metabolism