

# **Osteoporosis and Osteopenia**

Bourassa and Associates Rehabilitation Centre  
September 23, 2009  
Ask the Experts

# What is Osteoporosis?

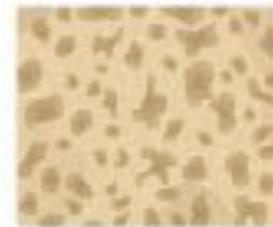
- *A disease involving low bone mass and deterioration of the architecture of the bone*
- *This can lead to increased bone fragility and an increased risk of bone fracture*
- *In osteoporotic individuals, fragility fractures most often occur in the spine, wrist and hip.*

# What is Osteopenia?

- *Osteopenia is a condition in which bone mineral density is lower than normal.*
- *It can present as a precursor to osteoporosis.*
- *Bone mass peaks as a young adult, therefore, it is the normal aging process to experience a decrease in bone mass. However, it is not considered a normal physiological change for bone loss to reach the level of osteoporosis and low-impact fracture.*



Normal bone



Close-up view



Bone with osteoporosis



Close-up view

- *Bone density scans can provide diagnostic evidence as to the degree of bone loss.*
- *Osteoporosis is defined by the World Health Organization as bone mineral density equal to or more than 2.5 standard deviations below the mean for normal, white women.*
- *In 2003, the prevalence of osteoporosis at the hip, spine or distal forearm among postmenopausal, white women was about 40%.*

# Risk Factors for Osteoporotic Fracture

- *Personal history of a low-impact fracture*
- *Low bone mineral density*
- *Advanced age*
- *Female*
- *Estrogen deficiency*
- *Low body weight (<127 lbs)*
- *Caucasian race*
- *Low lifetime calcium intake*
- *Inadequate physical activity*

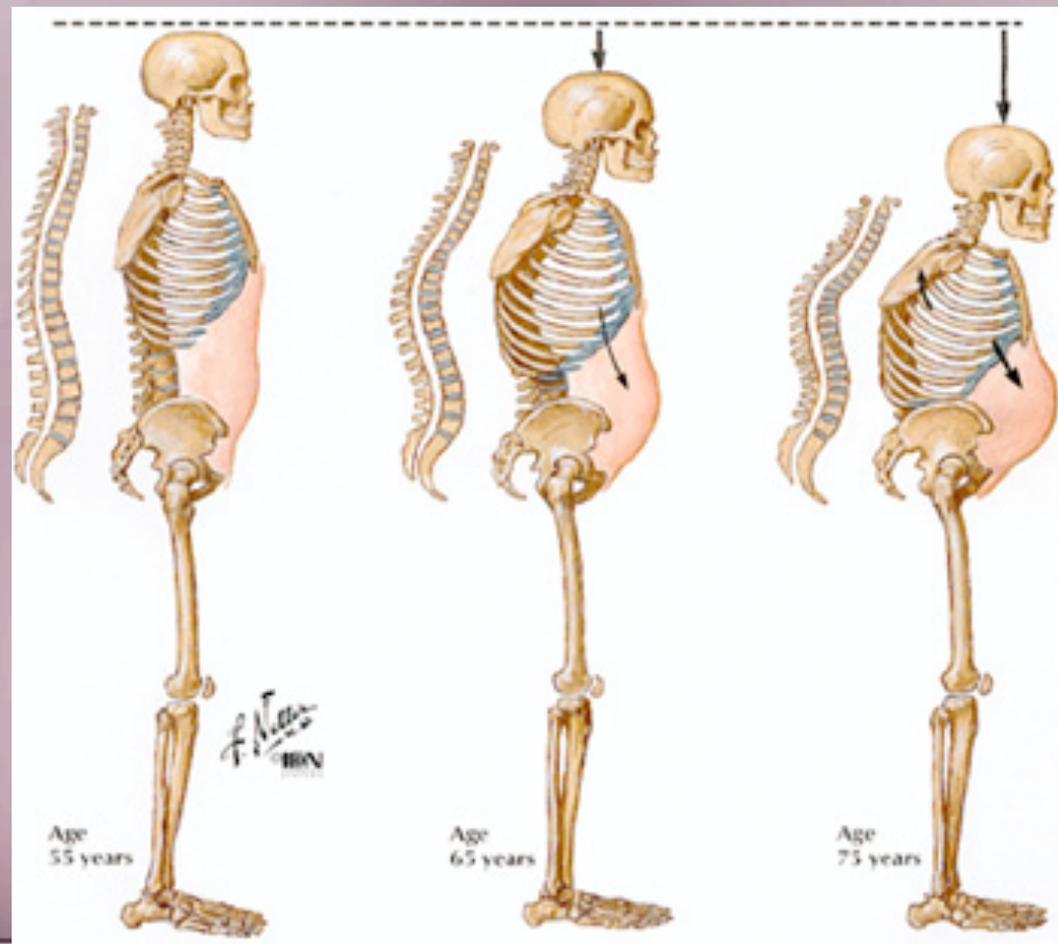
# Further Risk Factors for an Osteoporotic Fracture

- *Dementia*
- *Recurrent falls*
- *Poor health/frailty*
- *Current smoker*
- *Excessive alcohol consumption*
- *Impaired eyesight*
- *Family history of osteoporosis*

# Osteoporosis in Males

- *An area of decreased focus*
- *Continues to be underdiagnosed and inadequately treated in males*
- *However, men comprise 1/5 of individuals with osteoporosis*
- *Men have an increased rate of mortality following a hip fracture*

# Osteoporosis

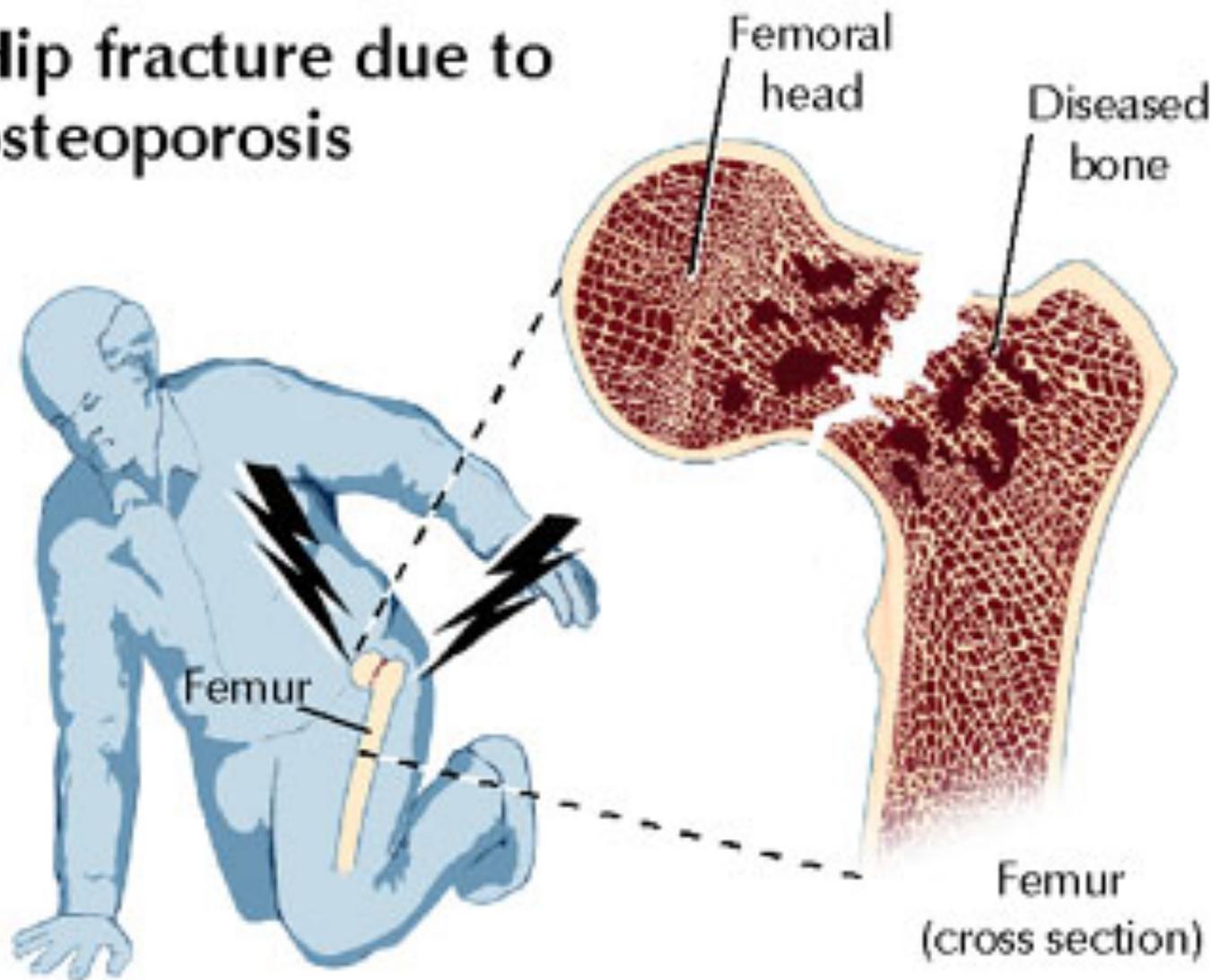


# Impact of Osteoporosis

- **Low Impact Fractures**

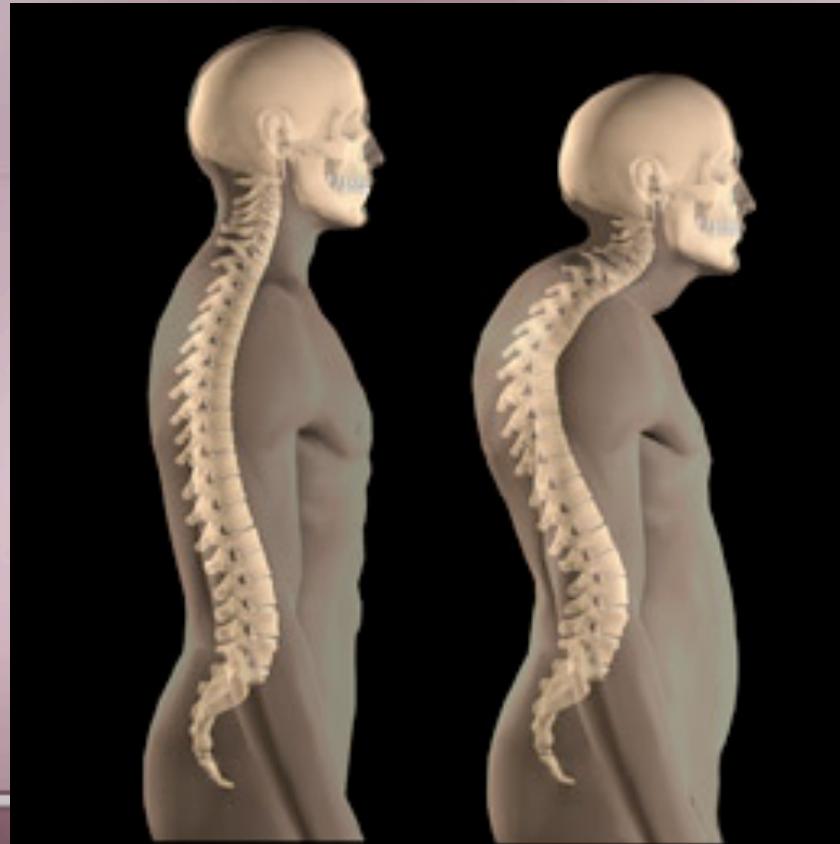
- *Decreased force required to fracture the fragile bone*
- *Fragility fractures most often occur in the spine (vertebrae), wrist (distal forearm) and hip (proximal femur)*

## Hip fracture due to osteoporosis



# Impact of Osteoporosis

- **Postural Abnormalities**



# Impact of Osteoporosis

- **Strength and Flexibility**

- *Decreased strength and flexibility associated with postural abnormalities.*

- **Balance**

- *Decreased balance increases fall (and fracture) risk*
- *Osteoporotic individuals utilize balance strategies at hips, while normal, age-matched individuals use strategies at ankles. This results in increased sway and a decreased ability to regain balance. Research has indicated that balance improvements can be made with training.*

# Rehabilitation Following Fracture

- **Hip Fracture**

- *Progressive range of motion and strengthening of hip and lower extremity*
- *Transfer, gait and balance retraining*

# Rehabilitation Following Fracture

- **Vertebral Fracture**

- *Core, spinal and shoulder girdle strengthening*
- *Spinal range of motion*
- *Teaching safe movements*
- *Balance retraining*

- **Distal Forearm Fracture**

- *Fracture of radius, ulna or both*
- *Following bony union (which may be delayed), progressive range of motion and strength retraining*

# Exercise and Osteoporosis

- *Osteoporosis and osteopenia are progressive conditions; meaning as time passes the severity of the condition can increase.*
- *Medication, diet alterations and vitamin supplements are forms of treatment.*
- *In conjunction, guided exercise can decrease the progressive nature of these conditions.*

# Exercise and Osteoporosis

Research demonstrates that the benefits of an exercise program for individuals with osteoporosis and osteopenia are widespread, including the following:

- *Decreased risk of falling*
- *Improved bone mass*
- *Improved muscles strength*
- *Better balance*
- *Better posture*
- *Increased tissue flexibility*
- *Improved aerobic fitness*
- *Better quality of life*

# Exercise and Osteoporosis

An exercise regime for individuals with osteoporosis and osteopenia should include the following:

- *Balance retraining to decrease fall risk*
- *Stretching and strengthening exercises to deviate from postural abnormalities*
- *General strengthening exercise for the entire body to promote bone formation*

# Safe Movements

- *Osteoporotic individuals should avoid movements that place high load forces on spine*
- *Forward bending (flexion) and twisting (rotation), especially when lifting or carrying objects*
- *Avoid combination movements of flexing and rotating through the spine*

# Bourassa and Associates Programs

- Exercise programs for prevention and improvement in osteoporosis
- Balance retraining and fall risk prevention

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Fort Qu'Appelle - All Nations Healing Hospital  
(306) 332-5055

Imperial - 310 Royal Street, Town Office Bldg  
(306) 963-2060

Kindersley - 205 Main Street, Kindersley  
Insurance  
(306) 463-2012

North Battleford - 982 102nd St, LifeTime  
Fitness  
(306) 445-9200

Outlook - 400 Sask Ave West  
(306) 867-2030

Regina - 1380 23rd Ave  
(306) 546-3210

Rosetown - 305 Highway #4 North  
(306) 882-2273

Saskatoon Medical Arts Bldg  
(306) 665-1962

Saskatoon Wall Street Medical Bldg  
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Saskatoon Westside Clinic - #2 3315 Fairlight  
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