Preventing Osteoporosis in Women Athletes

Stanton Davis, M.D.
TOC: The Orthopaedic Center
Phone (256)539-2728

WHAT IS IT?
A common disorder affecting both women and men that leads to fragility fractures.

WHO GETS IT?
25 million Americans (80% are women)
A third of white women over age 65 have osteoporosis; lifetime risk of any fracture among white women older than 50 approaches 75%.
Bone loss in women occurs most after menopause, when the rate of loss may be as high as 2% per year.

RISK FACTORS for fracture
1. Insufficient bone mass at time of maturity *****
2. Rapid loss of bone after menopause *****
3. Low body weight (<85% ideal)
4. Recent weight loss (>10 lbs)
5. History of fractures
6. Family history of fractures
7. Smoking

RISK FACTORS for osteoporosis
Genetic
- Family history
- Fair skin and hair
- Northern European background
- Scoliosis
- Early menopause
- Slender built

Behavioral and environmental
- Excessive alcohol use
- Smoking
- Inactivity
- Malnutrition
- Low calcium intake
- High phosphate diet (sodas)
- High fiber
- High protein

WHY SHOULD I WORRY ABOUT IT?
Fractures increase exponentially with aging in both men and women of all races.
Bone density
- Normal (0-0.9 SD)
- Decreased bone mass(1.0-2.5 SDs) – hip fractures increased 2 ½ X; spine fracture increased 2X
- Osteoporosis(>2.5 SDs)
- Severe osteoporosis(>2.5 SDs +fragility fracture)

HOW DO I KNOW IF I HAVE IT?
**Bone Density determination** - indicated for perimenopausal and postmenopausal women to determine their need for hormone replacement therapy, patients with metabolic bone disease or high number of risk factors. To monitor the effects of treatment.

The rate of active bone loss detected by breakdown products in **urine** (e.g. N-telopeptide, pyridinoline)

***Thus your doctor now can determine bone mass (densitometer), the rate of bone breakdown (in urine), and the risk of fragility fracture by your weight, fracture history and smoking history.***

**TREATMENT**

Must rule out secondary medical causes first.

1. **PREVENTION**
   a. Maximize peak bone mass (achieved by age 25) by:
      - adequate caloric intake
      - Calcium- taken throughout day, no dose larger than 500 mg (TABLE)
      - Calcium carbonate requires acidity to be absorbed
      - Calcium citrate
      - vitamin D
      - normal menstrual status
      - appropriate exercise
   b. Prevent postmenopausal bone loss

2. **INTERVENTION**
   a. For men and premenopausal women
      - Physiologic calcium
      - Vit D (400-800 U/day)
      - Adequate nutrition
      - Exercise (impact exercises, strengthening, and balance training)
      - **tai chi chuan – most successful in decreasing falls**
   b. For postmenopausal women or sooner if appropriate due to risk factors (6-10 years rapid bone loss)
      - All the above + Antiresorptive agents
      - Estrogen (with progestin if no hysterectomy done)- decrease fracture rate 50-75%, live longer because of reduced cardiovascular disease but potentially increase risk of breast CA
      - Alendronate (Fosamax)- 5 mg/d for mild-mod, 10 mg/d if mod-severe
      - New 60 mg/week extended release form
      - Calcitonin (Miacalcin)- 200 U/d via nasal spray for mild bone loss, new fractures, bone pain
      - Pamidronate (IV infusion) Paget’s disease or malignancy
      - Raloxifene (Evista)- an antiestrogen approved for prevention

**Not FDA approved/ experimental- Tamoxifen, Monofluorophosphate (Monocal), 24mg elemental fluoride/day. Slow-release sodium fluoride (under study)**