



Plastikos Plastic & Reconstructive Surgery
Plastikos Surgery Center
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HOLISTIC PREVENTION & TREATMENT OF OSTEOPOROSIS BY RICHARD J. CLOFINE, DO

Osteoporosis Defined

Osteoporosis is a bone disease in which bone tissue is normally mineralized, but the amount of bone is decreased and the structural integrity of trabecular bone is impaired. Cortical bone becomes more porous and thinner. This makes the bone weaker and more likely to fracture.

Via DEXA Bone Density Tests (World Health Organization Criteria via "T" Score)

- Normal - T score above -1
- Osteopenia - T score between -1 to -2.5
- Osteoporosis - T score lower than -2.5
- Severe Osteoporosis - Associated with prior fracture

Osteoporosis Risk Factors

- 1) Female gender
- 2) Thin or small frame (low body mass index)
- 3) Advanced Age
- 4) Family history
- 5) Caucasian or Asian
- 6) **Poor diet**
 - a. low calcium and magnesium intake
 - b. low intake of other important nutrients
 - c. excessive intake of certain nutrients
 - i. Caffeine
 - ii. Sugar and Salt
 - iii. Excess animal protein (sulphur based amino acids cause acidification)
 - iv. phosphoric acid in soda pop
 - v. Unhealthy fats
- 7) **Inactive lifestyle**
- 8) **Smoking**
- 9) **Excess alcohol intake**
- 10) Low testosterone levels in men (role in women is unclear)
- 11) Premature menopause & menopause
- 12) Associated Medical Conditions (Secondary Osteoporosis)
 - a. Hereditary skeletal diseases: osteogenesis imperfecta, rickets, hypophosphatasia
 - b. Endocrine and metabolic: hypogonadism, hyperparathyroidism, hyperthyroidism, Cushing syndrome, acidosis, Gaucher's disease
 - c. Anorexia and Bulimia
 - d. Malabsorption
 - e. Cystic Fibrosis
 - f. Marrow diseases: myeloma, mastocytosis, thalassemia



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- g. Renal insufficiency
- h. Hypercalciuria
- i. Hepatic disease
- j. Depression
- k. Spinal cord injury
- l. Systemic Lupus and Rheumatoid Arthritis

13) Associated with use of certain **Medications**

- a. Corticosteroids, Dilantin, gonadotropin releasing hormone agonists, loop diuretics, methotrexate, thyroid, heparin, cyclosporin, depot-medroxyprogesterone acetate

Risk of Fractures (Hip, Vertebral, Wrist)

- Bone Density + Bone Quality = Bone Strength
- Falling Risk + Force of Impact = Trauma Risk
- Bone Strength + Trauma Risk = Risk of fracture

RISK FACTORS FOR FRACTURE (these are significant regardless of bone density)

- 1) Falling and Force of impact (falling to side increases risk 6X)
- 2) Anticonvulsant use
- 3) Prior fracture
- 4) Hyperthyroid
- 5) On feet less than 4 hours daily
- 6) Inability to rise from chair
- 7) Resting pulse above 80
- 8) Benzodiazepine use
- 9) Advancing age
- 10) Poor eyesight & depth perception
- 11) Height
- 12) Caffeine intake

Important Nutrients

1) <u>Minerals</u>	<u>Ideal Daily Intake</u>	<u>Notes</u>
a. Calcium	1000–1500 mg	Diet often low Calcium Citrate > Calcium Carbonate <i>Leading Food Sources of calcium:</i> Broccoli , bok choy , milk , yogurt , amaranth , salmon , kale , beans , dried fruit , cheese , tofu , soybeans

Food Sources of Calcium

- Almonds 1/4 cup (95 milligrams)
- Bok choy, 1/2 cup cooked (79 milligrams)
- Calcium Fortified Cereal
- Calcium Fortified Orange Juice



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- Calcium Fortified Rice
- Calcium Fortified Soy Milk
- Figs - 5 dried (134 milligrams)
- Frozen Yogurt Dessert - 1/2 cup (195 milligrams)
- Milk - 1 cup (300 milligrams)
- Navy beans - 1/2 cup cooked (64 milligrams)
- Orange - 1 medium (52 milligrams)
- Pudding made with milk - 1/2 cup (150 milligrams)
- Sardines with bones - canned, 3 ounces (324 milligrams)
- Swiss Cheese - 1 ounce (272 milligrams)
- Tofu, fortified with calcium - 1 cup (516 milligrams)
- Yogurt - 1 cup (488 milligrams)

b. Magnesium 450–800 mg

Leading Food Sources of magnesium:

[Spinach](#), [avocados](#), [chocolate](#), [pumpkin seeds](#), [oysters](#), [sunflower seeds](#), [brazil nuts](#), [buckwheat](#), [amaranth](#), [quinoa](#), [almonds](#), [barley](#), cereals, nuts & seeds.

c. Boron 3-4 mg

No RDA established. Food sources of boron include green vegetables, fruit and nuts.

d. Silica 100–300mg

Silicon is a mineral found at high levels in grains such as oats, barley and rice. It's also found in fruit and vegetables.

e. Manganese 10–25 mg

Food sources include whole grains and cereals, tea, dried fruits, spinach and other leafy green vegetables.

f. Copper 2–3 mg

Some sources include meat, seafood, nuts, and seeds. Usually supplementation not indicated.

g. Phosphorus 800–1200 mg

Phosphorus Inadequate intake rare; Excessive intake common due to soda-pop. Phosphorus is a mineral found in red meat, dairy foods, fish, poultry, bread, rice and oats.

h. Zinc 15–25 mg

Leading Food Sources of zinc: [Barley](#), [crab](#), [lamb](#), [turkey](#), [wheat](#), [oysters](#), [beef](#), [chicken](#)

2) Vitamins Ideal Daily Intake Notes

a. Vitamin D 400–800 IU

Deficiency common in elderly

Leading Food Sources of vitamin D: [Milk](#), [Tuna](#), [Salmon](#) and oily fish (mackerel, herring, sardines, codliver oil,



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|----------------|-------------------------------------|--|
| b. Vitamin A | 4000 IU (female)
5000 IU (males) | SUNLIGHT
Excess vitamin A is bad for bones! |
| c. Vitamin B6 | 5–50 mg | <i>Leading Food Sources of vitamin B₆:</i> Sweet potatoes , Bananas , Mangoes , Avocados , Barley , Bok choy , Sunflower seeds , Tuna , Chick-peas , Salmon , Pork , fresh , Potatoes , Turkey , Chicken , Rice , brown , whole grains and cereals |
| d. Vitamin B12 | 10–100 micrograms | <i>Leading Food Sources of vitamin B₁₂:</i> Beef , Trout , Crab , Oysters , Clams , Tuna , Yogurt , Lamb , Spirulina |
| e. Folic Acid | 400 micrograms | <i>Leading Food Sources of folic acid:</i> Asparagus , Broccoli , Brussels sprouts , Bok choy , Turkey , Beans , dried , Chick-peas , Soybeans , Lentils , Oranges , Peas , fresh , Cabbage , Savoy , Avocados , Beets , Spinach , whole grains. |
| f. Vitamin C | 500–3000 mg | <i>Leading Food Sources of vitamin C:</i> Cabbage , red , Tangerines & other mandarins , Strawberries , Kiwi fruit , Oranges , Peppers , bell , red , potatoes . |
| g. Vitamin K | 300–1000 micrograms | <i>Leading Food Sources of vitamin K:</i> Broccoli , Swiss chard , Kale , Brussels sprouts , Spinach , Cabbage , greens , intestinal bacteria. |

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|---------------------|--|--|
| 3) <u>Nutrients</u> | <u>Ideal Daily Intake</u> | <u>Notes</u> |
| a. Fats | 15–20% of total calories in the form of HEALTHY FATS | Supplement mixed source Omega-3 fatty acids (e.g. cold water fish oil, flax seed oil, borage oil, evening primrose oil). Avoid unhealthy fats (animal fats and trans fatty acids). |
| b. Protein | 40 – 60 grams | Intake of protein often excessive |
| c. Isoflavones | 50-100 mg | Soy and Red Clover |
| d. Fiber | 35 grams | Maintain bowel health |

Acid – Alkaline Balance

An alkaline internal environment may reduce bone loss.
 An acid internal environment may increase bone loss.

THIS IS A VERY COMPLICATED SUBJECT!!!

THEORY:

Blood pH decreases slightly with aging (becomes more acid). This activates osteoclasts to break down more bone.

Postmenopausal women given bicarbonate show a slight increase in blood pH (more alkaline) and improved calcium balance indicating reduced bone breakdown.



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Bone salts are mobilized to balance (buffer) the endogenous acid generated by metabolism of acid-producing foods. Over a lifetime this contributes to progressive bone loss. Use of Potassium bicarbonate in postmenopausal women may improve calcium/potassium balance, reduce bone resorption and increase bone formation.

Osteoporosis is mainly the result of osteoclasts over-activity. It may be beneficial for older people (or all people) to avoid excessive dietary acid.

A major source of acid in the diet are animal proteins which yield sulphuric acid residues when metabolized. Phosphoric acid in soda-pop is another major source of acid in the American diet.

- 1) See list of acid and alkaline producing foods
 - a. Fruits yield alkaline residues from their metabolism.
 - b. The Wolfe Clinic: <http://www.thewolfeclinic.com/acidalkfoods.html>
- 2) Calcium Carbonate is a buffer and good source of dietary alkali
 - a. Coral calcium is calcium carbonate

OSTEOPOROSIS PREVENTION & TREATMENT

- 1) This is a lifelong process of 'creating health' through a healthful life style.
- 2) Optimal diet, exercise and supplementation for our daughters and granddaughters!
- 3) Proper attitude is achieved through education and understanding
 - a. Appropriate use of information to dictate good decision making (i.e. do not over-read DEXA Bone Density Scans)
- 4) Evaluation & Treatment must be INDIVIDUALIZED
 - a. Should include appropriate medical evaluation
- 5) Primary prevention is EXERCISE
 - a. How can this be supported for each individual?
- 6) Supplementation (www.consumerlab.com)
 - a. Multivitamin & Mineral
 - b. Calcium Citrate 1000 (normal)/1200(Osteopenia)/1500(Osteoporosis)mg daily
 - i. With Magnesium 250-750 mg
 - ii. With Vitamin D 400 IU
 - iii. Trace minerals available
 - c. Adequate B Complex
 - d. Mixed source omega-3 fatty acids
 - i. Fish oil, Flax seeds, Borage oil, Evening Primrose oil
 - e. Mixed source antioxidants
 - f. Specific other supplements



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7) Diet

- a. More fresh whole foods of all types
- b. Consider alkaline diet
- c. These foods promote bone health
 - i. Fish oils and Flax Seeds: Omega-3 fatty acids & lignans
 - ii. Avocado: good vegetarian source vitamin D
 - iii. Cabbage: rich in boron
 - iv. Dandelion: rich in boron, calcium and silica
 - v. Garlic and onion: Source of sulfur bearing amino acids
 - vi. Parsley: rich in boron
 - vii. Pigweed: 5.3% calcium; A small serving of steamed leaves (1/3 ounce or 1/10 cup) provides a hearty 500 milligrams of calcium.
 - viii. Green tea, yogurt
- d. The No-No's
 - i. No Caffeine
 - ii. No excess animal protein
 - iii. No soda pop
 - iv. No excess alcohol

8) Fall Prevention

- a. Occupational therapy – activities of daily living
- b. Padding
- c. Tai Chi and movement therapy
- d. Maintain adequate weight
- e. Eyesight correction
- f. Medication minimization

9) Natural Progesterone Skin Cream

- a. Over the counter
- b. Prescription

10) Estrogen Replacement Therapy

- a. Bioidentical
- b. Lowest effective dose
- c. Plan of usage with reevaluation
- d. Benefits > risks
- e. Balanced with Progesterone

11) Pharmacy Medications

- a. Biphosphonates (Fosamax, Actonel)
- b. Calcitonin (Miacalcin nasal spray)
- c. Reloxiphe (Evista)



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d. Thiazide Diuretics

Resources:

- Better Bones Better Body; Susan E. Brown, Ph.D., CCN; (Keats 2000)
- Hyperhealth Pro; www.hyperhealth.com
- Supplement Quality Control: www.consumerlab.com
- Website for Susan Ott, M.D. <http://courses.washington.edu/bonephys/ophome.html>
- The Osteoporosis Education Project <http://www.betterbones.com/index.htm>
- The Wolfe Clinic; <http://www.thewolfeclinic.com/acidalkfoods.html> (information on alkali diet)
- Strong Women, Strong Bones; Miriam Nelson, Ph.D.
- Women's Bodies, Women's Wisdom; The Wisdom of Menopause; Christianne Northrup, MD
- Bone Physiology Graphics; <http://www.medes.fr/Eristo/Osteoporosis/BonePhysiology.html>

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