



# Taking Charge: Building Better Bones and a Better Body

Susan E. Brown, PhD  
Center for Better Bones.

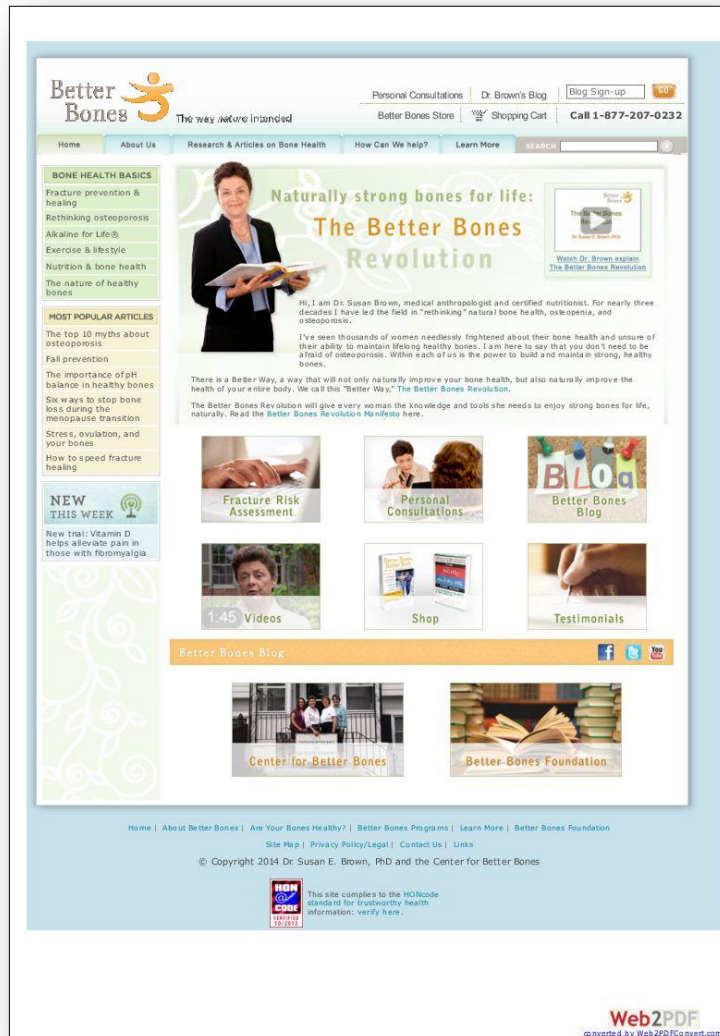
# Better Bones Hypotheses

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- ▶ The metabolic status of bone renewing cells provides insight into the whole organism's restorative efficiency and effectiveness.
- ▶ Comprehensive bone health is key to, and also a predictive marker of, overall systemic health.
- ▶ What we do for bone should be good for the entire body. This is called a whole body approach.



# The Center for Better Bones



[www.betterbones.com](http://www.betterbones.com)

Center for Better Bones  
Susan E. Brown, PhD, Director  
888-206-7119

## Better Bones, Better Body Program®

- step 1** ASSESS YOUR INDIVIDUAL CASE
- step 2** MAXIMIZE NUTRIENT INTAKE
- step 3** DETOXYFY AND MINIMIZE ANTI-NUTRIENT EXPOSURE
- step 4** ENHANCE DIGESTIVE STRENGTH AND NUTRIENT ABSORPTION
- step 5** DEVELOP AN ALKALINE FOR LIFE® EATING PATTERN
- step 6** EXERCISE INTO BONE HEALTH
- step 7** PROMOTE HORMONE BALANCE AND STRENGTHEN IMMUNE SYSTEM
- step 8** TEST FOR SUCCESS AND PROGRAM READJUSTMENT

Developed by Susan E. Brown, Ph.D., CNS  
*The "Better Bones" Nutritionist*  
(315) 432-1676

## The Better Bones, Better Body® Program

8 steps to better bone health

# Maximize Nutrient Intake

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- ▶ Steps **2** and **5**
  - ✓ Alkaline for Life<sup>®</sup> eating pattern
  - ✓ 20 key nutrients
  - ✓ Bone fortifying nutritional supplements




# Better Bones Eating Guidelines

An Alkaline for Life® Eating Pattern

## FOOD GUIDELINES for Better Bone Strength at Any Age

☒ Always try to buy local, fresh organic food in season.

|                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>VEGETABLES</div>  | <p><b>Low-Carb type:</b> 3 to 4 cups a day.</p> <p>Try to include 1 cup of high calcium leafy greens such as collards, kale, dandelion, turnip greens, or bok choy. Other low carb vegetables include broccoli, carrots, spinach, lettuce, onions, celery, string beans, artichoke, summer squash, endive, cucumbers, asparagus, chard, peppers, parsley, sprouts, tomatoes, sea vegetables, etc.</p> |
| <div>VEGETABLES</div>                                                                                   | <p><b>High-Carb type:</b> 1 to 2 servings a day.</p> <p>Potatoes, yams, sweet potatoes, parsnips, winter squash, turnips, etc.</p>                                                                                                                                                                                                                                                                    |
| <div>DRIED BEANS<br/>(LEGUMES)</div>                                                                    | <p>1 or more servings a day.</p> <p>Split peas, lentils, kidney beans, navy beans, chickpeas, aduki beans, black beans, white beans, mung beans, soy beans, tofu, etc.</p>                                                                                                                                                                                                                            |
| <div>FLESH FOODS</div>                                                                                  | <p>Limit to one 4-5 oz. serving a day. Fish is preferable, fresh lean meats acceptable in moderation.</p>                                                                                                                                                                                                                                                                                             |
| <div>FRUITS, FRESH</div>                                                                                | <p>2-4 per day (use fresh fruits in season whenever possible).</p>                                                                                                                                                                                                                                                                                                                                    |
| <div>NUTS AND SEEDS</div>                                                                               | <p>A small amount of fresh, unsalted nuts and seeds if desired. Home roasted sunflower, sesame, or pumpkin seeds make an excellent snack or garnish.</p>                                                                                                                                                                                                                                              |
| <div>ESSENTIALS FATS</div>                                                                              | <p>3-4 teaspoons cold-pressed or expeller pressed vegetable oils, especially flax seed, olive and coconut. Refrigerate all oils. High temperature cooking destroys their value.</p>                                                                                                                                                                                                                   |
| <div>WHOLE GRAINS</div>                                                                                 | <p>Several servings to comprise 15-20% of diet.</p> <p>Brown rice, oats, corn, millet, barley, buckwheat, amaranth, quinoa, wheat, teff, triticale, rye, buckwheat, spelt.</p>                                                                                                                                                                                                                        |
| <div>DAIRY</div>                                                                                        | <p>0-3 servings as tolerated. Yogurt is the most easily digestible and a preferred form of dairy.</p>                                                                                                                                                                                                                                                                                                 |
| <div>WATER</div>     | <p>8 glasses a day. Hot water is best for digestion and detoxification purposes. Ginger tea and lemon water are also excellent. Purified or mineral or spring water is preferred.</p>                                                                                                                                                                                                                 |

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Consume and assimilate all 20 key bone nutrients  
in adequate doses from diet and supplements  
combined.

Visit  
[www.betterbones.com/bonenutrition/20keybonenutrients.aspx](http://www.betterbones.com/bonenutrition/20keybonenutrients.aspx)  
to learn more about the 20 key nutrients.



## THE 20 KEY BONE BUILDING NUTRIENTS

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| Nutrient                                      | Adult RDA or AI                                                                                 | Therapeutic Range for Bone Health*                               | Dietary Considerations                                                                                                                                                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calcium                                       | 1,000–1,200 mg                                                                                  | 800–1,200 mg                                                     | Typical diet is inadequate, averages 500–600 mg. <sup>1,2</sup>                                                                                                                                                                                |
| Phosphorus                                    | 700 mg                                                                                          | 800–1,200 mg                                                     | Inadequate intake is rare except in elderly and malnourished; excessive intake common with use of processed foods and soft drinks.                                                                                                             |
| Magnesium                                     | 420 mg men<br>320 mg women                                                                      | 400–800 mg                                                       | Intake generally inadequate: All ages, sexes, classes, except children less than 5, fail to consume this RDA. 40% of population, 50% of adolescents consume less than 2/3 the RDA. <sup>3,5</sup>                                              |
| Silica                                        | No RDA established                                                                              | 30–40 mg                                                         | Intake significantly higher in men (30–33 mg/day) than in women (~25 mg/day), yet generally suboptimal. Silica is the first element to go in food processing.                                                                                  |
| Zinc                                          | 11 mg men<br>8 mg women                                                                         | 20–30 mg                                                         | Average intake is 46 to 63% the RDA. <sup>4</sup> Marginal zinc deficiency is common, especially among children. <sup>5</sup>                                                                                                                  |
| Manganese                                     | 2.3 mg men<br>1.8 mg women                                                                      | 2–10 mg                                                          | Intake generally inadequate, 1.76 mg adolescent girls, 2.05 mg women, and 2.5 men. <sup>6</sup>                                                                                                                                                |
| Copper                                        | 900 mcg (0.9 mg)                                                                                | 1–3 mg                                                           | 75% of diets fail to contain the RDA. <sup>4,7</sup> Average intake is below the RDA. <sup>5</sup>                                                                                                                                             |
| Boron                                         | No RDA established                                                                              | 3–5 mg                                                           | 0.25 mg intake is common <sup>8</sup> to perhaps optimum of 3 mg                                                                                                                                                                               |
| Potassium                                     | 4,700 mg                                                                                        | 4,700–6,000 mg                                                   | Adult intake averages 2,300 mg for women and 3,100 mg for men. <sup>9</sup>                                                                                                                                                                    |
| Strontium                                     | No RDA established                                                                              | 3–30 mg                                                          | Daily dietary intake thought to vary from 1 mg to more than 10 mg.                                                                                                                                                                             |
| Vitamin D                                     | 600 IU before age 70<br>800 IU after age 70                                                     | 2,000–5,000 IU & up as needed                                    | Deficiency is common especially among the elderly, dark skinned and those with little UV sunlight exposure.                                                                                                                                    |
| Vitamin C                                     | 90 mg men<br>75 mg women                                                                        | 500–3,000 mg or more to bowel tolerance as needed                | Average daily intake is about 95 mg for women and 107 for men ( <a href="http://www.pdrhealth.com/drug_info/inmdrugprofiles/nutsupdrugs/vit_0264.s.html">http://www.pdrhealth.com/drug_info/inmdrugprofiles/nutsupdrugs/vit_0264.s.html</a> ). |
| Vitamin A                                     | 2,997 IU men<br>2,331 IU women                                                                  | 5,000 IU or less                                                 | 31% consume less than 70% the RDA. <sup>10</sup> Current intake for women is about 2,373 mcg/day. <sup>11</sup>                                                                                                                                |
| Vitamin B <sub>6</sub>                        | 1.3–1.7 mg men<br>1.3–1.5 mg women                                                              | 25–75 mg                                                         | Studies indicate widespread inadequate vitamin B <sub>6</sub> consumption among all sectors of the population. <sup>12</sup>                                                                                                                   |
| Folic acid/folate (vit. B <sub>9</sub> )      | 400 mcg                                                                                         | 400–1,000 mcg                                                    | Inadequate intake common among all age groups, but is improving with food fortification. <sup>5</sup>                                                                                                                                          |
| Vitamin B <sub>12</sub>                       | 2.4 mcg                                                                                         | 150–1,000 mcg                                                    | 12% consume less than 70% RDA. <sup>10</sup> Older people and vegans are especially at risk. <sup>5</sup>                                                                                                                                      |
| Vitamin K<br>K <sub>1</sub><br>K <sub>2</sub> | 120 mcg men, 90 mcg women<br>No RDA established                                                 | 250–1,000 mcg<br>100–200 mcg as MK-7                             | Averages 45 to 150 mcg, which is well below the recommended AI. <sup>13</sup><br>Average US intake 9–12 mcg (if any)                                                                                                                           |
| Fats                                          | Should comprise 7% of calories minimum. General recommendation is not to exceed 30% of calories | 30% of total calories is perhaps more ideal                      | The average American consumes 33% of his/her calories in fat. The consumption of essential fatty acids, however, is frequently inadequate. <sup>5</sup>                                                                                        |
| Protein                                       | 0.8 g/kg per day men and women<br>125 lb person = 45 g<br>175 lb person = 63 g                  | 1.0 to 1.5 g/kg per day<br>125 lb = 56–85 g<br>175 lb = 79–119 g | Intake commonly exceeds 100 g, but the elderly and women over 50 often have very deficient intakes. Higher protein intake should be balanced with higher RDA level potassium intake from food sources. <sup>5</sup>                            |

\* The common therapeutic dose for bone health may be significantly higher in "special need" cases.

## The 20 Key Bone Building Nutrients



## Ten Steps to Stronger Digestion

A Self-Help Program by Susan E. Brown, Ph.D.

- 1. Consume cooked foods instead of cold or raw foods*  
As traditional Eastern medicine explains, food must be "burned" in the "fire" of digestion. Cold and raw foods must be "heated-up" more than cooked foods and as such they dampen and weaken the fire of digestion. Persons with weak digestion would do well to eat no or little raw or cold food or drinks. This means favoring lightly cooked vegetables and fruits instead of raw ones, and using hot soups, casseroles, or grain and bean dishes, instead of sandwiches or snack type meals. Drinking hot drinks are helpful. Ice water taken with meals weakens digestion.
- 2. Chew your food well and eat at a moderate pace*  
Ideally we should chew each mouthful some 30 times, breaking the food into small particles and allowing the salivary enzymes to begin their work digesting the food. Putting the fork down between each mouthful and swallowing one bite before taking another is suggested.
- 3. Eat in a peaceful and relaxed environment*  
If you do a little comparative test, you will note that you feel better and your digestion is smoother when you eat in a quiet and peaceful environment. Avoid watching television, reading, working, or arguing with others when you eat. You will see the difference.
- 4. Eat simply*  
Mixing many different types of foods taxes the digestive system. Experiment with simple meals of just 2 or 3 types of foods.
- 5. Eat fruit between meals and favor cooked fruit*  
Raw fruits dampen the digestive fire, especially during the winter when we are already cold. As such, those with weak digestion might find eating raw fruits with meals causes intestinal gas and bloating. Cooked fruit is a fine dessert, but keep the raw fruit for snacks and even then it might be a problem if your digestive fire is smoldering rather than blazing.
- 6. Drink hot water and hot herb teas*  
Hot water is an excellent way to detoxify the body and build digestive strength. Simmering a few slices of ginger root in boiling water makes a ginger root tea that stimulates digestion. Ginger in food has the same effect, as does candied ginger root taken after meals.
- 7. Eat freshly cooked foods*  
Freshly cooked foods are most nourishing and free of molds or any stale qualities. Better to eat a freshly cooked simple meal than a complicated one made of processed food or leftovers.
- 8. Avoid overeating*  
Excessive intake of food greatly burdens the entire digestive system. Ancient Ayurveda medicine recommends consuming the amount of food that will fit into two cupped hands at any meal. Practice moving away from the table while you are still a bit hungry.
- 9. Sit still and relax a few minutes after eating*  
Digestion is an amazing process; it turns tofu enchiladas into blood and cells. Resting a few minutes after eating gets this very complicated process off to a good start.
- 10. Seek professional help as necessary*  
If these simple self-help steps do not resolve your digestive problems you should consider consulting both a physician and a nutritionist. Your nutritionist can help you figure out if nutritional digestive aid would be useful in your case. Your physician can investigate the possibility that a medical problem is affecting your digestion.

# 10 Steps to Stronger Digestion



## Bone Nutrients We Highlight

# Vitamin D

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# Vitamin D Status Measurements

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The test of vitamin D adequacy is the serum 25(OH)D test.

- ▶ Ideal blood level is 50 to 60 ng/ml



# Vitamin K

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$K_1$  from green leafy veggies  
 $K_2$  from fermented foods



# Vitamin K<sub>2</sub>

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- ▶ Will food factor vitamin K as MK-7 from fermented soy natto be as effective as pharmacological doses of synthetic MK-4?



# Vitamin C

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- ▶ Ascorbate form of vitamin C — the great giver

# Ideal Daily Intake of Vitamin C

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- ▶ Depends on half life of ascorbate in the body. This means the need for vitamin C depends on free radical damage and anti-oxidant need.
- ▶ Better Bones always uses a fully reduced, buffered ascorbate with minerals.
- ▶ Dose of 3,000 to 4,000 mg a day for everyone.
- ▶ Those interested in health maximization should use buffered ascorbate to bowel tolerance.






# Better Bones Calcium Guidelines

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- ▶ A total of 1,200 mg from diet and supplements per day for the average adult.
- ▶ Pregnant and lactating women need 200 to 300 mg more.

| FOODS HIGH IN CALCIUM |        |
|-----------------------|--------|
| sesame seeds          | 351mg  |
| spinach               | 245 mg |
| collard greens        | 266 mg |
| blackstrap molasses   | 137 mg |
| kelp                  | 136 mg |
| tahini                | 126 mg |
| broccoli              | 124 mg |
| swiss chard           | 102 mg |
| kale                  | 94 mg  |
| brazil nuts           | 90 mg  |
| celery                | 81 mg  |
| almonds               | 75 mg  |
| papaya                | 73 mg  |
| flax seeds            | 52 mg  |
| oranges               | 52 mg  |



# Trace Minerals

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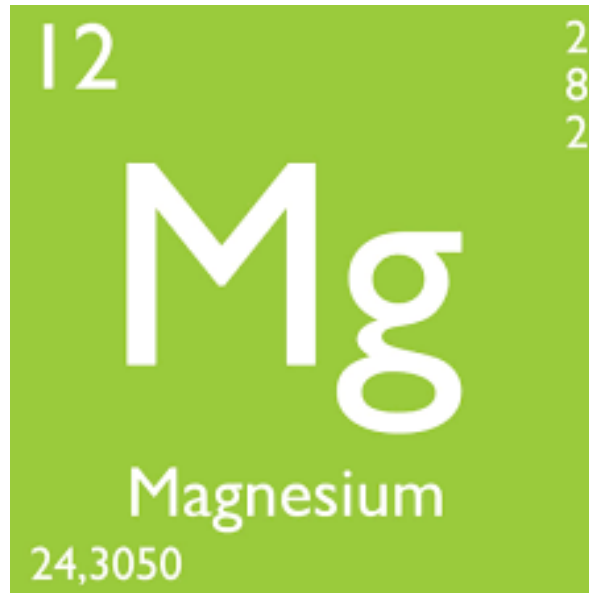


- ▶ Magnesium, Zinc, Manganese, Copper, Boron, Silica, Iron are called trace minerals.
- ▶ Actual intake levels and therapeutic levels are outlined on the **20 Key Bone Building Nutrients Handout.**



# Magnesium

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# Magnesium

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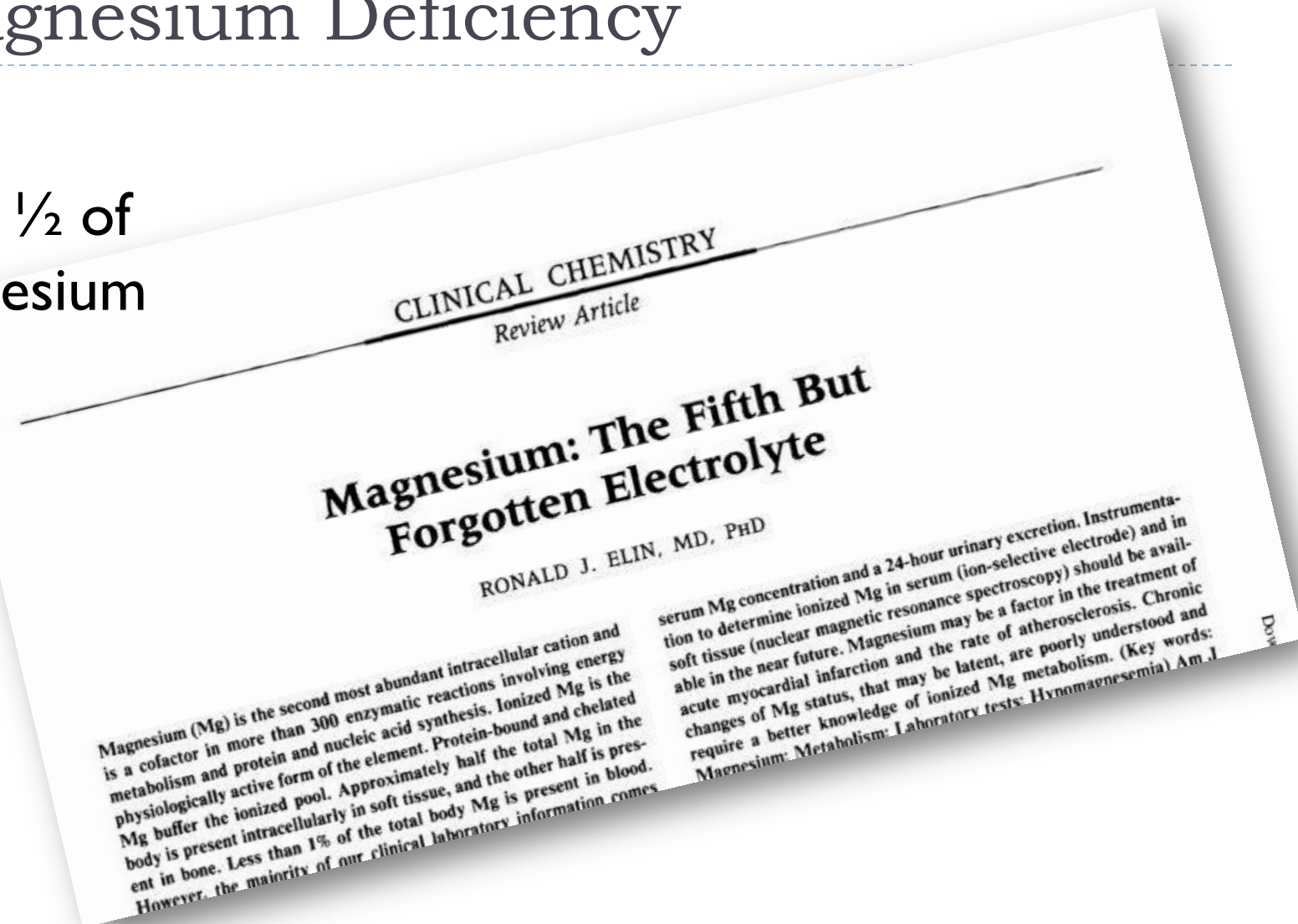
- ▶ RDA is 320 mg/day for women; 420 mg for men.
- ▶ Most women do not consume the RDA of magnesium and 40% of population consumes less than 2/3 the RDA.
- ▶ Magnesium is the first nutrient lost in food processing (whole wheat flour has 136 mg in 1 cup and white flour has only 34 mg).
- ▶ Food sources include nuts, seeds, greens, beans, soy/tofu, and whole grains.
- ▶ The Better Bones recommended intake: 600 to 1,000 mg.  
This is equal to or more than calcium intake.



# New Measure of Magnesium Deficiency

Discovered by Dr. Ron Elin

- ▶ Any reading in the lower 1/2 of standard serum lab magnesium test indicates deficiency.



# Potassium

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## The Unexpected Bone Builder Protects Bone

- ▶ The RDA for potassium at 4,700 mg is nearly four times that of calcium (at 1,200 mg). This is equivalent to 13 servings of vegetables, fruits, nuts, and seeds.



# Potassium Citrate Increases Bone Mass in Post Menopausal Women

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- ▶ A randomized, double-blind controlled one-year trial of 161 post-menopausal women with osteopenia or osteoporosis.
- ▶ Subjects were given either potassium chloride or potassium citrate in equivalent doses (30 mEq per day).
- ▶ Those given **3.1 g potassium citrate/day experienced a 1.9% increase in spinal BMD and a 1.4% increase in femoral neck, and 2% increase in total hip** over those given potassium chloride.

– Jehle et al. 2006





## An Alkaline Diet



## FOOD GUIDELINES for Better Bone Strength at Any Age

☒ Always try to buy local, fresh organic food in season.

### VEGETABLES



**Low-Carb type:** 3 to 4 cups a day.  
Try to include 1 cup of high calcium leafy greens such as collards, kale, dandelion, turnip greens, or bok choy. Other low carb vegetables include broccoli, carrots, spinach, lettuce, onions, celery, string beans, artichoke, summer squash, endive, cucumbers, asparagus, chard, peppers, parsley, sprouts, tomatoes, sea vegetables, etc.

### VEGETABLES

**High-Carb type:** 1 to 2 servings a day.  
Potatoes, yams, sweet potatoes, parsnips, winter squash, turnips, etc.

### DRIED BEANS (LEGUMES)

1 or more servings a day.  
Split peas, lentils, kidney beans, navy beans, chickpeas, aduki beans, black beans, white beans, mung beans, soy beans, tofu, etc.

### FLESH FOODS

Limit to one 4-5 oz. serving a day. Fish is preferable, fresh lean meats acceptable in moderation.

### FRUITS, FRESH

2-4 per day (use fresh fruits in season whenever possible).

### NUTS AND SEEDS

A small amount of fresh, unsalted nuts and seeds if desired. Home roasted sunflower, sesame, or pumpkin seeds make an excellent snack or garnish.

### ESSENTIALS FATS

3-4 teaspoons cold-pressed or expeller pressed vegetable oils, especially flax seed, olive and coconut. Refrigerate all oils. High temperature cooking destroys their value.

### WHOLE GRAINS

Several servings to comprise 15-20% of diet.  
Brown rice, oats, corn, millet, barley, buckwheat, amaranth, quinoa, wheat, teff, triticale, rye, buckwheat, spelt.

### DAIRY

0-3 servings as tolerated. Yogurt is the most easily digestible and a preferred form of dairy.

### WATER



8 glasses a day. Hot water is best for digestion and detoxification purposes. Ginger tea and lemon water are also excellent. Purified or mineral or spring water is preferred.

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An alkaline diet is a diet high in vegetables, fruits, nuts, seeds, pulses, and spices with a moderate amount of protein.

# Protein

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How much do we need?

- ✓ Too much or too little is problematic for bone.
- ✓ 60 grams a day is adequate for most women. Those in vigorous training may need 20 mg more a day.
- ✓ Value of BUN (urea nitrogen test).



# Functions of Bone

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## **Structural**

- ▶ Rigidity
- ▶ Upright posture
- ▶ Levers for muscles
- ▶ Locomotion
- ▶ Organ protection

## **Metabolic**

- ▶ Blood cell incubator
- ▶ Ensure blood calcium homeostasis
- ▶ Protect systemic acid-base balance

*Bone sacrifices structural functions for metabolic functions.*



# Alkaline for Life® Diet

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- ▶ An alkaline diet is important because the base precursors it provides allow the bones to fulfill their metabolic functions without depleting themselves with resultant damage to bone structure.

# Bone as an Alkali Buffer

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Bone is a gigantic alkali buffer exchange column loaded with alkali buffer compounds.

Bone and the hydration shell around it contain:

- ▶ 80% of body carbonate
- ▶ 80% of body citrate
- ▶ 35% of body sodium
- ▶ 53 to 80% of body magnesium
- ▶ 0.1 to 0.2% of body potassium

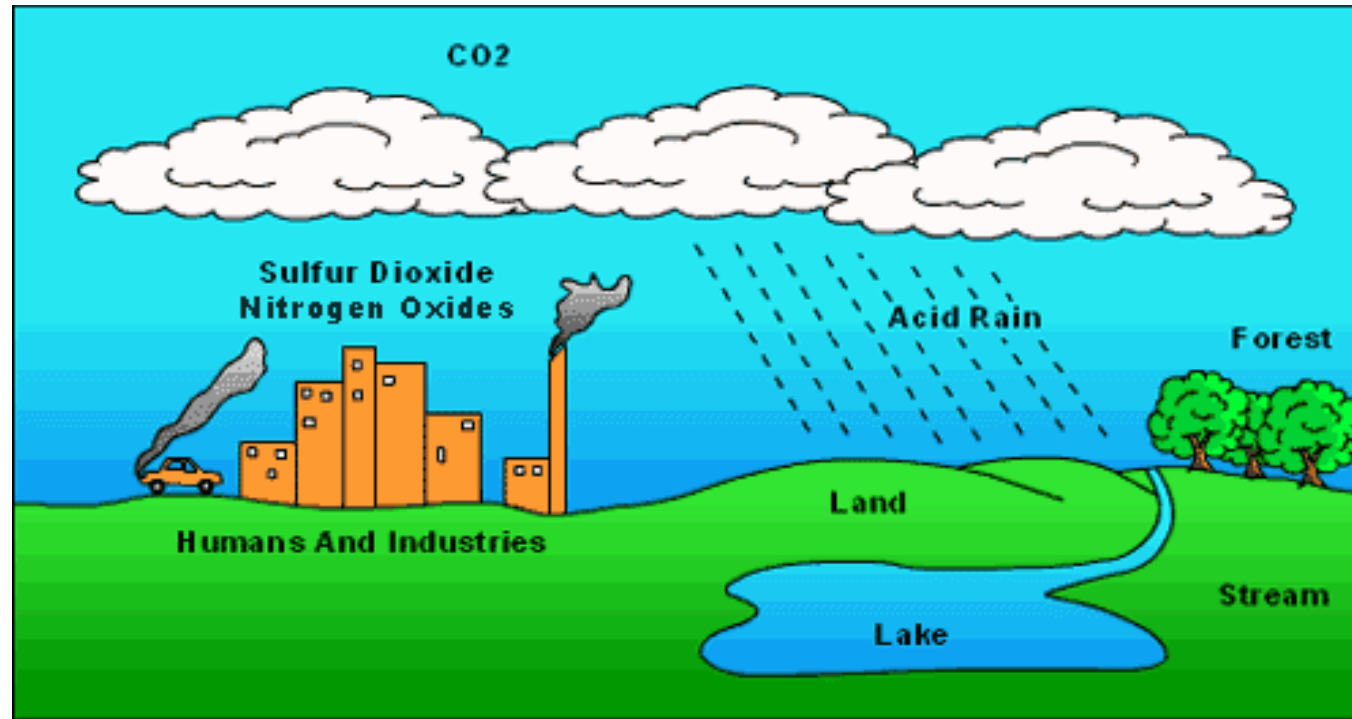
– Brown and Jaffe 2000; Green and Kleeman 1991a



# Alkaline for Life®

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## Eliminate Chronic Low-Grade Metabolic Acidosis





## Acid Load Neutralization Improves Bone Strength

# Neutralizing Metabolic Acidosis Halts Bone Loss

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Frassetto and colleagues at the University of California neutralized net acid load of diet with a base as potassium bicarbonate ( $\text{KHCO}_3$ ) using 60 to 120 mmol/day and

- ▶ Decreased blood acidity
- ▶ Decreased kidney calcium excretion
- ▶ Regained positive balance of calcium and phosphorus
- ▶ Decreased urinary nitrogen wasting (enough to both prevent continued muscle loss and restore previously accrued deficits)
- ▶ Decreased bone resorption
- ▶ Increased bone formation
- ▶ **Halted bone loss in a sustained fashion** (over 5 years of study)

– Sebastian et al. 1994; Frassetto et al. 2001 and 2005; Jajoo et al. 2006; and New 2002

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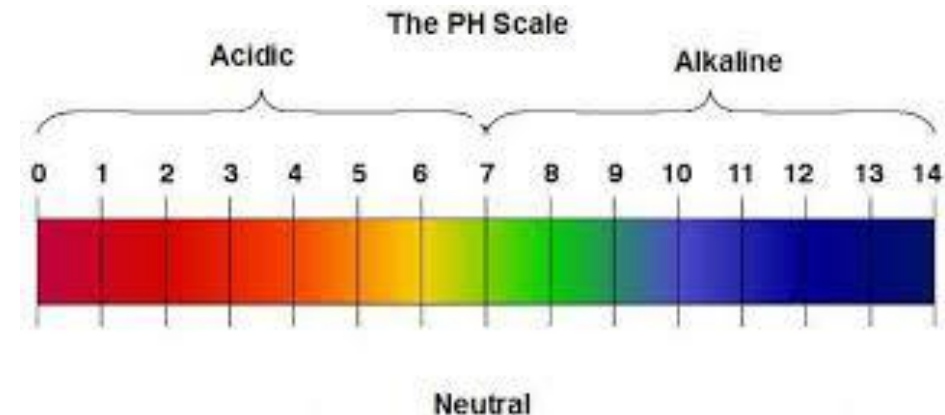
# How Do You Know If You Have a Favorable pH Balance?

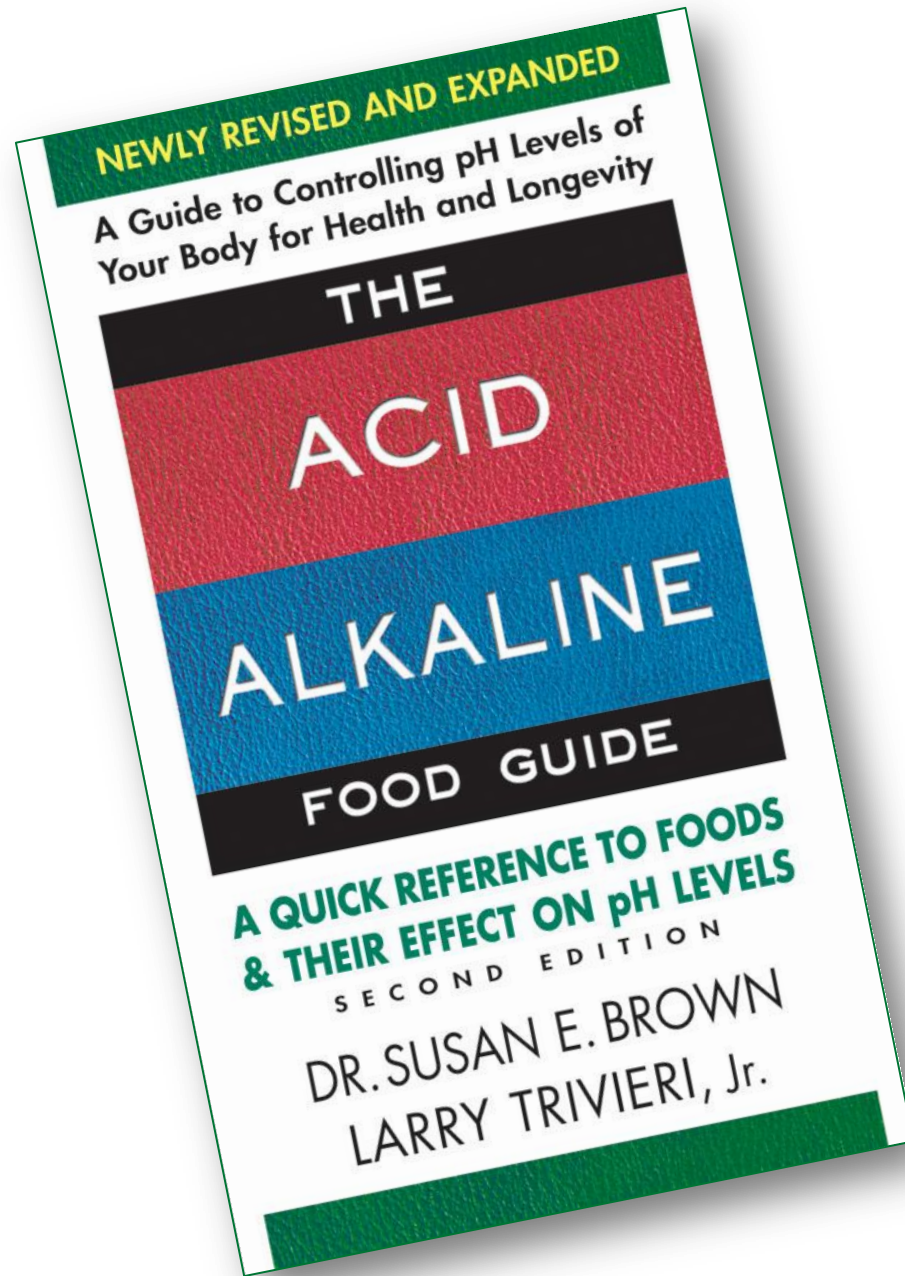
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## ***The Acid Alkaline Food Guide***

- ✓ Dr. Brown's best-seller
- ✓ Translated into 6 languages
- ✓ 2<sup>nd</sup> edition newly revised and expanded in 2013

# Whether We Realize It or Not, We Are Infinite Choice Makers

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- ▶ With these quiet decisions we create not only our today, but also our future.





### Your Personal Better Bones, Better Body® Commitment

A. Four steps I will take towards implementing the Better Bones eating guidelines

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

B. I will monitor my mineral status by testing my first morning urine, striving to attain a pH reading of 6.5 to 7.

Yes \_\_\_\_\_ No, not just yet \_\_\_\_\_

C. The top 4 key bone-building nutrients that I need more of are likely:

- |          |          |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ | 4. _____ |

D. I can increase my intake of these and other key bone-building nutrients by taking the following steps:

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E. How I might further explore my individual nutrient needs:

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F. I will check to see if my current nutrition supplement program provides me with adequate doses of all 20 key bone nutrients.

## Your Better Bones, Better Body® Personal Commitment



**And Don't Forget  
This Saying from  
the Ancient  
Chinese Philosopher  
Lao Tzu**





Call us at 888-206-7119

**with questions or to schedule a consultation. I'd love to hear from you.**

**– Susan Brown, PhD**  
**[www.betterbones.com](http://www.betterbones.com)**