

Osteoporosis and Bone Health: The importance of lifestyle choices and reasons to avoid calcium supplements



by Miles Hassell MD

This handout is adapted from *Good Food, Great Medicine* (4th edition), a Mediterranean diet and lifestyle guide and cookbook. For a more detailed prescription for stronger bones see pages 27-28. The book is a practical, easy-to-read resource offering both the evidence and the tools to help prevent or reverse heart disease and type 2 diabetes, control high blood pressure, improve cholesterol levels, reduce risk of stroke, dementia, and cancer, and lose weight where appropriate. *Good Food, Great Medicine* presents simple food and activity choices to reduce medications and improve long-term health. (You will find this handout as well as other helpful lifestyle medicine topics like *Weight Loss and Diabetes Reversal* and *Cancer Prevention and Survivorship* on the [resources](#) tab at goodfoodgreatmedicine.com)

The prevention and management of osteoporosis and osteopenia has many facets. This handout addresses those lifestyle choices which seem to be the most effective in achieving the primary goal of preventing fractures (broken bones) and improving bone strength and resilience. We'll discuss the startling benefits of exercise; the issue of calcium from supplements versus whole foods; the significance of vitamins D, B12, and K; the Mediterranean diet and strong bones; about medications; one woman's successful reversal of osteoporosis; and a few bone-friendly recipe ideas.

Daily exercise is critical! Hop to it!¹

Healthy bones need exercise, especially the weight-bearing kind like walking, climbing stairs, jumping rope, and weight training. This improves bone strength as well as balance and flexibility, making us less likely to fall – and more muscle lowers the risk of a broken bone if we *do* fall. This is especially important for women at risk for

osteoporosis.² Exercise also strengthens the muscles that support bones. Although physical activity is important for everyone, the decision to exercise daily is critical for someone who already has osteoporosis. I strongly recommend a daily exercise program that involves both weight bearing and muscle building components, and encourage those who are able to also include 2 minutes of hopping.³ If you can't hop, do heel drops: rising up on your tip-toes and then dropping back onto your heels, while holding onto something like the back of a chair for stability. A physical therapist can design a program to follow at home to improve bone strength, and reduce fracture risk, as well.

Why I don't recommend supplemental calcium or calcium-fortified foods⁴

- Most studies show that calcium supplements do not seem to prevent fractures,^{5,6} and contribute little to bone density.^{7,8}
- Calcium supplements appear to be associated with significant potential for harm, including an increased risk of heart disease⁹ and dementia.¹⁰
- In contrast, calcium from food sources appears to protect against heart disease.¹¹
- There appears to be an increase in age-related macular degeneration with supplemental calcium in observational studies.¹²
- Also, avoid supplements with boron and strontium (see next page).

² Kemmler, W. et al. Arch Intern Med 2010;170:179-85

³ Kemmler, W. et al. Osteoporos Int 2015 Oct;26(10):2491-9

⁴ Zhao, J.G. et al. JAMA 2017;318:2466-82

⁵ Warensjo, E. et al. BMJ 2011; 342:d1473 doi:10.1136/bmj.d1473

⁶ Bolland, M.J. et al. BMJ 2015;351:h4580

⁷ Tai, V. et al. BMJ 2015;351:h4183doi:10.1136/bmj.h4183

⁸ Michaelsson, K. BMJ 2015;351:h4825 doi:10.1136/bmj.h4825

⁹ Reid, I.R. et al. J Intern Med 2015;doi:10.1111/joim.12394

¹⁰ Kern, J. et al. Neurology 2016;87:1-7

¹¹ Anderson, J.J.B et al. J Am Heart Assoc 2016;5:e003815

¹² Kakigi, C.M. et al. JAMA Ophthalmol 2015;133(7):746-54

¹ Hannam, K. et al. Osteoporos Int 2017;doi:10.1007

Get calcium from whole foods, not calcium supplements

Calcium is important for bone health, but 800-1,200 mg a day from food sources appears to be plenty. In contrast to naturally occurring calcium found in whole foods, there is substantial (and growing) evidence that calcium from supplements may actually be harmful. **I do not recommend calcium supplements for anybody.** Adequate calcium from food sources is easily achieved if you include two or three servings of calcium-rich foods daily (see box below). Avoid calcium-fortified foods like juice and commercial breakfast cereal: instead, get naturally occurring calcium from whole food sources. **Calcium-fortified foods are just another form of calcium supplementation.**

Examples of whole foods which deliver about 300 mg of calcium per serving:

- 1¼ cups cooked greens like spinach, kale, chard, or collard greens
- ¾ cup edamame (fresh soy beans)
- 3 ounces canned sardines (with bones)
- 4 ounces canned salmon (with bones)
- 8 ounces of plain yogurt or kefir
- 1½ ounces of hard cheese like extra-sharp cheddar and Parmesan
- ½ cup ricotta cheese
- ½ cup tofu (made with the natural coagulant calcium sulphate)
- ¼ cup sesame seeds

Other nutritional supplements

I do not recommend over-the-counter nutritional supplements that claim to build bone, such as those with vitamin K, boron, or strontium: the evidence does not support the claims. Before taking nutritional supplements, consult with a physician who is educated in both the benefits *and* risks – and as a general principle I recommend you think twice before you buy supplements from the person who recommends them! consumerlab.com is one of the better information sources regarding nutritional supplements.

Dairy as a calcium source

Two or three servings of dairy per day are probably a reasonable maximum, and the evidence favors cultured dairy foods such as aged cheese, yogurt, and kefir (a yogurt-like cultured milk drink) rather than milk itself. This is not to condemn milk, but simply to point out that the greatest historical evidence for benefit favors cultured dairy foods. Although I can't make a strong case, I believe the evidence favors whole milk or 2% dairy over 1% or non-fat. However, I can make a *very* strong case against sugar-delivery systems disguised as dairy foods, such as sweetened non-fat yogurt (see below). But even honest dairy foods are not critical to a healthy diet; if you are intolerant of dairy, don't fret. There are plenty of other whole food sources of calcium that are not dairy-based. (See box on left.)

▪ Plain yogurt and kefir with live cultures

(probiotics) are immune-boosting and have high available calcium content. (Kefir has a different spectrum of good microorganisms.) For the best value from yogurt and kefir choose plain unsweetened, with active cultures clearly noted on the label. Add your own sweetening, such as fruit or honey – like us, good bugs do better in sugar-free environments. These helpful microbes even partially predigest the lactose in milk, which allows some people with lactose intolerance to enjoy the benefits of yogurt. Choose 2% or whole milk versions – non-fat yogurt usually includes additives for flavor and “mouthfeel” to make up for the missing fat. (Eight ounces of pre-sweetened non-fat yogurt can include as much as 6–9 teaspoons of added sugar!) Avoid commercial frozen yogurt – it is generally junk food. (For more about yogurt, see pages 47-49 and 118 of *Good Food, Great Medicine*.)

▪ **Evidence favors aged cheeses** like extra-sharp cheddar and Parmesan. These traditionally cultured cheeses have higher levels of vitamin K, and as they are stronger and richer than softer, younger cheeses, they have a higher “satiety factor” (meaning they are more satisfying). This may be due to their more intense flavor, or perhaps extended aging affects fats and proteins.

The best way to get our vitamin D

This is a complex issue. Vitamin D levels in the range of 20–40 ng/ml are associated with healthy bones as well as lower rates of mortality (death),¹³ obesity, type 2 diabetes, heart disease, high blood pressure, depression, and some cancers. However, blood levels **above** 40 ng/ml may be associated with harm, including higher death rates.¹³ **As in the case of calcium from food compared to supplemental calcium, it appears that naturally occurring vitamin D may have much better effects than supplemental vitamin D.** In fact, after decades of research it is still unclear whether vitamin D *supplements* prevent fractures, osteoporosis, or other diseases, and higher levels of supplementation (e.g. 2,400 units per day) may be associated with harm.¹⁴ In my practice we aim for a blood level of 20–40 ng/ml, supplementing with 1,000–2,000 iu daily only if we are unable to get enough vitamin D from natural sources like oil-rich fish and sunlight. (When reading studies that discuss blood levels of vitamin D, note which measuring unit is used: “ng/ml” or “nmol/l.” If you need to compare, multiply ng/ml by 2.5 to convert to nmol/l.)

Naturally occurring vitamin D

The natural sources of vitamin D are sunlight and eating oil-rich fish (like salmon, light or yellowfin tuna, sardines, and herring) or cod liver oil. An example of sensible sunlight exposure is to expose as much of your skin to the sun as you reasonably can, without sunscreen, for 10-15 minutes most days in sunny months. The more square inches that are exposed to the sun, the more vitamin D you will make. The farther you live from the equator, the more difficult it is to get vitamin D from the sun – but avoid getting sunburned! To achieve the blood levels thought to be beneficial, most of our patients require supplements. Mushrooms exposed to ultraviolet light may be emerging as another vitamin D source.

Get vitamin K from whole foods

Although the data are fuzzy, it looks like Vitamin K from food (especially phylloquinone) is an important factor in fracture risk reduction.¹⁵ Some of the richer food sources of vitamin K include the family of leafy green vegetables (especially kale and collards) and naturally fermented foods such as salt-cured sauerkraut, kimchi, aged cheese, and tempeh (fermented cooked soybeans). I recommend a daily serving of leafy greens and one of the fermented foods, if possible – **but I do not recommend vitamin K supplements.**

Get vitamin B12 from whole foods, too

Low B12 levels increase risk of fracture, and once again, the best way to raise your levels is through food. There is no evidence that B12 supplements help.¹⁵ Good whole food sources of B12 are shellfish, oil-rich fish like salmon and sardines, organ meat (like liver), and unprocessed red meat. Two or three servings of red meat a week is probably enough.

Prunes and black tea

- Prunes (dried plums), 5–10 per day, help improve bone strength.¹⁶ (A favorite snack is a few of *Trader Joe's* non-sorbate pitted prunes with a handful of raw almonds. You can also find individually-wrapped *Sunsweet* prunes at the grocery store.)
- Black tea, 3 or more cups a day with or without milk (but not green tea), is associated with lower total and 42% lower hip fracture risk.¹⁷ (For a good-tasting tea bag, try *PG Tips*, an English black tea with pyramid shaped bags.)

Medical evaluation and medications

There are several approaches to prescription medications for osteoporosis, and these vary in their effectiveness at reducing the risk of broken bones as well as side effects and cost. **It is important to understand that increasing bone density does not necessarily reduce fractures.** For example, some medicines formerly used to treat osteoporosis were found to increase bone density, *but actually increased fractures* because they made the bones more brittle. Simply improving bone

¹³ Kramer, H. et al. PLOS ONE 2012;7:e47458

¹⁴ Bischoff-Ferrari, H. et al. JAMA Intern Med 2016;176:175-83

¹⁵ Sahni, S. et al. Curr Osteoporosis Rep 2015;13:245-55

¹⁶ Hooshmand, S. et al. Br J Nutr 2011;106:923-30

¹⁷ Prince, R. Am Soc Bone Mineral Research 10/9/2015

density is not enough: the goal is to prevent fractures.

- Before taking any medication or nutritional supplement, ask if it has been shown to *prevent fractures* in patients with your personal profile.
- Certain medical conditions, some common, predispose to weak bones.
- Also, many medications have the side effect of weakening bones.

Summary:

So, in addition to exercising daily, eating calcium-rich whole foods, getting adequate vitamin D, and avoiding calcium supplements and calcium-fortified foods, it would be wise to discuss the above aspects of your bone health with your physician.

An omnivorous Mediterranean diet and strong bones

An unrestricted whole food Mediterranean diet appears to be associated with lower rates of hip fractures,¹⁸ arguably one of the most important measures of bone health. In contrast, vegetarian diets are associated with *more* osteoporosis and fractures.¹⁹ This may in part be due to the lower levels of naturally occurring B12 in vegetarian diets.

- Foods most strongly associated with better bone health all happen to be a part of a whole food Mediterranean diet, such as vegetables, fruit, whole grains, beans, seafood, red meat, dairy, and moderate wine intake.
- Processed foods have been found to be detrimental to bone health in multiple studies²⁰ – another good reason to prepare your own food from scratch using whole food ingredients!

Some whole food recipes providing extra calcium and vitamins D, K, & B12

Here are some easy-to-prepare recipes from *Good Food, Great Medicine* (4th edition) which put bone-strengthening principles to work in your kitchen:

Plain yogurt or kefir:

- Tips on choosing (pages 49 and 118)
- *Faux Ranch Dressing* (page 157)
- *Goop (Rich Yogurt Aioli)* (page 156)
- *Definitive Dip* (page 158)
- *Tzatziki* (page 157)
- *Yogurt Dessert Cream* (page 118)
- *Yogurt Panna Cotta* (page 279)
- *Prune Smoothie Pudding* (page 7 of this handout)
- *Yogurt Smoothies* (pages 166-167)
- *Homemade Kefir* (page 165)

Cooked greens:

- *Simple and Succulent Cabbage* (page 124)
- *Roasted Vegetables* (master recipe page 176): asparagus (page 177), broccoli, Brussels sprouts, and cabbage (page 179)
- *Green Eggs and Quinoa* (page 6 of this handout)
- *Greens and Beans* (page 251)
- *Red Lentil Soup with greens* (page 250)
- *Sautéed Sturdy Greens* (page 7 of this handout)
- *Speedy Spinach Soup* (page 190)
- *Spinach and Cheese Crepes* (page 254)
- *Spinach Frittata* (page 198)
- *Spinach Timbale (Custard)* (page 197)
- *Creamy Spinach (Palek Paneer)* (page 203)

Soy beans and tofu:

- *Seductive Soybeans* (page 7 of this handout)
- *Soybeans in the Pod* (page 210)
- *Tofu in Soy Ginger Marinade* (page 173)
- *Tofu Pâté* (page 172)

Oil-rich fish:

- *Sardine Pâté* (page 169)
- *Salmon Cakes* (page 238)
- *Tuna and Broccoli Pasta* (page 240)
- *Tuna and White Bean Salad* (page 241)

Red meat:

- *Chopped liver* (page 169)
- *Meat Loaf* (page 243)
- *Chili con Carne* (page 248)
- *Beef Stew* (page 244)

¹⁸ Haring, B. et al. JAMA Intern Med. 2016;176(5):645-652

¹⁹ Tucker, K. AJCN 2014;100(suppl):329S-35S

²⁰ Sahni, S. et al. Curr Osteoporosis Rep 2015;13:245-55

How Bonnie beat osteoporosis (and improved her cholesterol, too)

Bonnie, a 68-year-old quilter and ski instructor, was warned by her primary care doctor about the risks from her high cholesterol and osteoporosis. Because she was reluctant to start taking more medications, she grabbed her copy of *Good Food, Great Medicine* to see what she could do herself to improve bone strength, lower her cholesterol, and reduce her heart disease risk. A year later, the results of her follow-up tests were exciting:

- **Bone strength:** Bonnie's hip bone density improved without medication, instead of the expected worsening.
- **Cholesterol:** This improved, too, without medication: Bonnie's HDL ("good") cholesterol went up, her triglycerides and LDL ("bad") cholesterol dropped, and her total cholesterol-to-HDL ratio improved, which is associated with a lower risk of heart disease.
- **Weight:** She lost 10 pounds in the first 3 months. We asked Bonnie how she did it, and it turns out that her steps were simple, sensible, and doable for any of us:

What were the main changes you made?

"I think the biggest change was to eliminate sugar from my diet. Consequently I dropped 10 pounds in about 3 months. I worked to maintain that new weight by watching portions and increasing my activity level.

I followed Dr. Hassell's prescription for foods known to help reduce cholesterol [pages 103–106 of *Good Food, Great Medicine*, 4th edition] and osteoporosis [pages 27–28], and followed his suggestions for weight loss and preventing or reversing insulin resistance and type 2 diabetes [pages 90–109]. Then I made notecards and a shopping list [pages 130–131] that included those foods, and incorporated them into home-cooked meals. As a result, of course, I spent more time in the kitchen and ate out less. When I went out with family or friends, I allowed myself to eat moderately whatever they ate. Back home...clean eating ruled!

I also printed enough pages of the *Good Food, Great Medicine* lifestyle log [page 110] to make a small journal, and I used it to check myself for weaknesses and strengths. It has become a habit,

and unless we have a super busy week, I keep it up regularly.

One last thing that works for me: I find that if I keep my counters clear of food, I'm less likely to wander into the kitchen and eat everything in sight when I'm stressed. That means eliminating packaged snacks, cookies, etc. I made a list of all the "snack" foods recommended in *Good Food, Great Medicine* [pages 144–146] and posted it on my fridge, and whenever the desire to snack came over me I chose from that list."

What were your main obstacles?

"The hardest part was learning what to eat in place of my bad habits. The next biggest challenge was controlling the amount of time I was spending in the kitchen. I love to cook. Every time I go out to a nice restaurant, I think about how I could have cooked the same meal at home so much cheaper and more delicious...and it spoils the treat of going out. I worked out a routine of making soups and salads that would last for two or three days. I froze some to give me a supply of freezer meals. It worked out over time that I spent less time in the kitchen, but was still eating my own home-cooked food. Of course, there were the usual speed bumps like holidays that bombarded us with sweets, and those times when I couldn't seem to budge from plateaus. It was a constant adjustment of shopping, cooking, planning menus, and journaling – but I set my goal and stuck with it no matter how many times I stumbled."

What about exercise?

"We work [as ski instructors] only in January and February usually, so it's a challenge to stay in shape through the summer and fall. I've been a regular at the Silver Sneakers classes and I do Zumba Gold twice a week. I set a goal of 10,000 steps a day and sometimes I hop [see page 27] and jog in place when I'm short on steps."

Is your success sustainable?

"**Yes!** Home cooked meals, fresh veggies and fruits, making my own kefir and yogurt, no fast food...all that reduces waste and waist!"

Green Eggs and Quinoa (or brown rice)

This recipe can be found on page 253 of *Good Food, Great Medicine*, 4th edition. This is an easy one-dish meal rich in protein, good fat, fiber, and vegetables. It allows lots of flexibility in terms of ingredients: chopped cooked broccoli instead of (or as well as) spinach, for example, or sliced green onions instead of regular onions, or other kinds of cheese. You can use any kind of leftover brown rice, cooked millet (page 220), or whole grain pasta. Leftovers are delicious heated for lunch the next day. Using this recipe as a basic model, and given that you probably have eggs, milk, and cheese on hand, you may want to put this on the *Ten Most Useful Recipes* list.

(Serves 4 as a main dish, more as a side dish)

1 bag (16 ounces) frozen chopped spinach
-or- 16 ounces fresh spinach, roughly chopped

2–4 tablespoons extra-virgin olive oil

1 medium-large onion in ¼-inch dice (3 cups)

Optional: ½ pound of fresh sausage (see note)

6 eggs

1½ cups whole milk

1 teaspoon salt

1 teaspoon freshly ground black pepper

6 ounces sharp cheddar cheese, grated (2 cups)

½ cup freshly grated Parmesan *or* crumbled feta cheese

1½ cups *cooked* quinoa (recipe this page) *or* millet (page 220) *or* brown rice (page 222)

Preheat oven to 300 degrees. Oil a 9x13-inch (3 quart) Pyrex baking dish or similar.

1. To thaw frozen spinach or prepare fresh spinach, see page 252. (No need to drain the spinach – it's ready to add to the egg mixture in step 4.)
2. Heat oil in a 10-inch skillet over medium high heat and sauté onion about 10 minutes or until very tender. (See note if you plan to add sausage.) Remove from heat and set aside.
3. Whisk eggs in a mixing bowl (like an 8-cup Pyrex jug). Add milk, seasoning, cheeses, cooked quinoa, spinach, and sautéed onion, and mix very well.
4. Scrape into oiled baking dish and bake uncovered for about 60 minutes or until it's no longer wet in the center.

Note:

▶ You can combine the uncooked mixture hours or even a day ahead: bring to room temperature and stir well before transferring to cooking dish.

▶ Adding ½ pound of fresh chicken or pork sausage (page 68) to the sautéed onions in Step 2 will kick up the flavor, the protein, and the crowd-pleasing qualities. Just push the onions to the side and sauté sausage until browned and well crumbled.

▶ Suggestions for preparing other kinds of greens are on page 128.

▶ Although confident enough to perform solo as a main act, this pairs nicely with *Marinated Carrot Matchsticks* (page 202), or a substantial salad like *Warm Lentil Salad* (page 213). Once you put *Green Eggs and Quinoa* in the oven you're free to work on a side dish.

Quinoa

Quinoa (KEEN-wah) looks like ivory-colored millet. Although not technically a grain, it's generally used like one. Quinoa is high in protein, and can be an alternative to brown rice, especially since it cooks in about half the time. Quinoa has a natural coating that supposedly has a bitter taste, so recipes often suggest rinsing before cooking – although most quinoa is apparently pre-washed. However, I never rinse quinoa and have never noticed any bitterness. If you choose to rinse, make sure the sieve is fine enough; quinoa can sneak through some pretty small holes. Also, measure it before rinsing – it swells quickly.

(Makes about 4 cups)

1½ cup quinoa

2¼ cups water

½ teaspoon salt

1. Bring water and salt to a boil in a 2-quart pot (one that has a lid) and add quinoa. Bring back to a boil, then reduce to a simmer, cover, and cook for 20 minutes. The water should be absorbed and quinoa should be tender.
2. Remove quinoa from the heat. Fluff grains by tossing with a fork, reaching down to the bottom of the pot. Cover again and set aside for 5–10 minutes.

Note:

▶ Freeze leftover quinoa if not using within a week or so.

Sautéed Sturdy Greens

The sauté method works best for the more tender varieties of sturdy greens like Swiss chard or beet greens. Both have stems that should be sliced and sautéed before the leaves. (Spinach barely needs cooking at all.) These greens can be served alone as a side dish or with cooked whole grains and beans for a main dish. (The recipe is on page 194 of *Good Food, Great Medicine*, 4th edition.)

(Makes about 3 cups cooked greens)

1½ pounds of greens, cleaned, stemmed, and chopped, about 2 bunches (see pages 128-129)

-or- about 12 cups of chopped greens

3–4 tablespoons extra-virgin olive oil

1 teaspoon freshly crushed garlic

Optional: a pinch of crushed red pepper flakes

1. Heat olive oil over medium heat in a large deep skillet (10-12-inch), pot, or wok.
2. Add garlic and optional pepper flakes, and sauté for about 10 seconds. (Avoid browning the garlic!) If you have sliced stems, add and sauté until tender, about 10 minutes.
3. Add chopped greens. If you add them one big handful at a time, tossing and turning them in the hot pan as you go, you will find them easier to manage.
4. Continue to toss and turn the greens until they are tender enough for your liking. (Some like greens *al dente*, others like them very tender.) Kale and collards take longer than chard or beet greens.

Note:

▶ **Sautéing already-blanching greens:** Blanching greens don't need much (if any) cooking. We suggest always blanching the tougher greens like kale and collards before sautéing. Follow directions above but add all the blanched greens at once and sauté until hot through and tender enough for your taste.

▶ **Serving suggestions:** The simplest treatment is just a generous sprinkle of freshly grated Parmesan on the hot greens. Other ideas: toss with a tablespoon or two of vinaigrette; toss with toasted pine nuts or slivered almonds and a handful of raisins; add a couple of cups of cooked garbanzo beans (chickpeas) and crumbled feta cheese, and serve over hot brown rice or quinoa.

Prune Smoothie Pudding

This recipe is an alternative to eating dried prunes by themselves. When used for constipation or osteoporosis, the suggested dose is usually about 10 prunes per day: this recipe fills the prescription. By the way, this also makes great baby food! (Recipe on page 166 of *Good Food, Great Medicine*.)

(Makes about 1¼ cups)

10 dried pitted prunes (see note)

1 cup plain whole milk yogurt

1. Cut each prune in half with kitchen scissors to check for rogue pits.
2. Combine with yogurt in blender and blend for 30 seconds. Scrape down sides and then blend for another 30 seconds. (Immersion blenders are not efficient here – prunes jam the blade.)

Note:

▶ The soft, sticky sort of prune works best. If your prunes are dry, soak in ¼ cup of water overnight.

Seductive Soybeans

The Japanese call these fresh green soybeans *edamame* (*ed-uh-MAH-may*) when they're in the pod and *mukimame* when they're shelled, as they are here. They have a nutty, sweet quality and can be found in the frozen food department.

(Recipe on page 210 of *Good Food, Great Medicine*.)

(Makes about 3 cups)

1 cup water

1 teaspoon salt

16-ounce bag frozen shelled green soybeans

2 tablespoons extra-virgin olive oil

1 tablespoon apple cider vinegar

1 teaspoon freshly crushed garlic

½ teaspoon salt

¼ teaspoon freshly ground pepper

1. Bring water to a boil in a 2-quart saucepan and add salt and soybeans. Bring back to a boil and break up any clumps of beans. Reduce heat to low, cover, and simmer for about 5 minutes.
2. Combine olive oil, vinegar, garlic, salt and pepper in a mixing bowl.
3. When soybeans are cooked (cooked soybeans have a naturally firm texture), drain and add to the oil and vinegar mixture. Toss to coat beans. Serve warm or room temperature.

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Dr. Hassell established the [Integrative Medicine Program](#) at Providence Cancer Center in Portland and he is a clinical instructor in the training of Internal Medicine residents, twice named *Outstanding Teacher of the Year*, and is Associate Medical Director and Professor at Pacific University School of Physician Assistant Studies. He also lectures widely to physician groups about the appropriate integration of lifestyle and conventional medicine. He is the co-author of *Good Food, Great Medicine*, an evidence-based guide to using a whole food Mediterranean diet in the pursuit of optimal health.

In his private practice Dr. Hassell encourages the vigorous use of evidence-based food and lifestyle choices and has been chosen as one of *Portland's Top Doctors*. Dr. Hassell is available for individual consultations for diagnosis, second opinion, or to develop patient-centered solutions using evidence-based conventional and lifestyle interventions.

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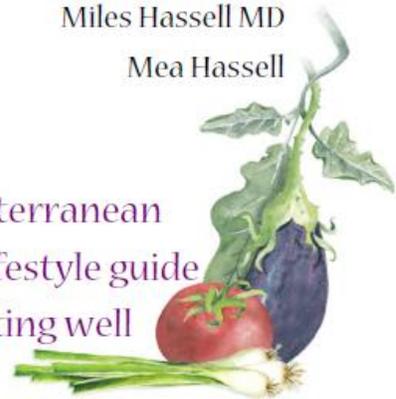
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Fourth Edition

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