

# A NUTRITIONIST'S VIEW

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## Feeding the Active Female: Part I

**H**ow can you help the active females you work with make good dietary changes to fuel their sport and activities, while helping them to maintain a healthy body weight for their sport? Active women have a number of nutrition and energy issues in common, especially women who compete in competitive sports and live active lifestyles. In our fast-paced world, there never seems to be enough time to make good nutrition and healthy eating behaviors a priority. Discussed below are two common nutrition problems you will encounter when working with active women. Our next column (Part II) will focus upon the common food issues of active women, whereas Part III will discuss fueling issues of active women and men and the timing of energy intakes in relationship to activity. The final column (Part IV) will focus upon feeding and nutrition issues seen in active men.

### Identifying Nutrition Issues

Although there are many nutrition issues that can arise when working with active women, two of the most common problems you will encounter will be poor iron status and poor intakes of the bone building nutrients. You can determine whether your client has one of these problems by asking a few simple questions:

- First, always ask your active female clients whether they have had their iron status checked recently (*e.g.*, within the last year). If they haven't, encourage them to request a total iron assessment the next time they see their physician. Also encourage them to track their iron status over time, especially if their assessment comes back below

normal. An iron status assessment should include an assessment of serum concentrations of ferritin, iron, total iron binding capacity (ability of iron to bind to its transport protein in the blood),

and hemoglobin. If status is low, it generally takes three to six months to return iron status to normal; thus it is imperative that your client catch poor iron status early before it progresses into iron deficiency



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anemia (*e.g.*, poor hemoglobin levels).

- Second, ask your female clients whether they use dairy products. If they don't, then bone-building nutrients may be low in their diet. The next step is to determine whether adequate calcium is being obtained through other sources such as calcium-fortified foods or supplements. Remember that a variety of nutrients are required to maintain good bone health, not just calcium, so helping your female athletes find the nutrients typically found in dairy products may require sending them to a dietitian for help in meal planning and food selection.

### Common Nutrition Issues of Active Women

#### Iron

Poor iron status, especially low serum ferritin concentrations, is still a common problem in active women of childbearing age. The cause of this poor status is generally attributed to three primary factors: 1) poor intakes of meat, fish, and poultry products that contain heme iron, the most absorbable form of iron in the diet, 2) decreased bioavailability of the iron in the diet, which means that the iron being consumed is not being absorbed through the gut into the body, and 3) increased losses of iron in sweat, blood, urine, and feces (1). As iron status declines, the first iron assessment parameter to decrease is serum ferritin, which typically means that an individual has depleted iron stores and iron is not available for the iron-dependent enzymes that help produce energy. Recent research shows that iron supplementation in women with low ferritin concentrations, even when serum iron and hemoglobin levels are normal, significantly decreased 15-km running times compared with control subjects who were not supplementing (2). For this

reason, all active females should be encouraged to have their iron status checked yearly. If poor status is indicated, recommend that she see her doctor and a dietitian who can help her identify why iron status may be poor and work to correct the problem. If poor iron intake is indicated, then eating heme sources of iron, using iron fortified foods, or taking iron supplements will help reverse the deficiency. Because iron supplements may cause gastrointestinal distress, finding alternatives to supplements may be necessary.

For women of childbearing age, the current Recommended Dietary

Allowance (RDA) for iron is 18 mg/day (3). A female needs to replace approximately 1.3 to 1.5 mg iron per day; however, because only a small fraction of dietary iron is absorbed, the RDA is set more than 10 times that value. The current U.S. diet has an iron density of approximately 6 mg/1,000 kcal, so unless good food choices are made, the diet may be low in iron. For example, look at the Table for the iron content of a typical breakfast (1 c cereal, 1 c milk, 2 sl bread) and dinner (3-oz chicken breast, 1 baked potato, 1 c. spinach) meal that an active woman might consume. The majority of the

**Table 1. Iron and Bone-Building Nutrients (Protein, Calcium, Magnesium, and Vitamin D) in Selected Foods**

Selected Foods	Protein (g)	Iron (mg)	Calcium (mg)	Magnesium (mg)	Vit D (µg)
<b>Dairy products</b>					
1 c. nonfat milk, vit A/D added	9.0	0.15	270	34	2.5
1 c. yogurt, plain	11.9	0.18	415	39	0.1
1 c. 1% cottage cheese	28.0	0.32	138	11	0.1
1 oz. cheddar cheese	7.0	0.19	204	8	0.1
<b>Grains and Cereals</b>					
1 c. Post Raisin Bran Cereal	4.7	10.80	27	89	1.0
1 sl. whole wheat bread	3.7	1.43	15	75	0.1
2 oz. white pasta, cooked	2.9	0.65	3	10	0
1 c. white rice, cooked	4.3	1.90	16	19	0
<b>Meats, Fish, Poultry</b>					
3 oz roasted chicken breast	18.3	0.91	9	17	0.2
3 oz pacific salmon	21.9	0.77	24	104	—
3 oz roasted beef	15.4	1.79	8	11	0.2
3 oz baked ham	15.9	1.02	6	21	—
<b>Vegetables</b>					
1 lg baked potato, plain	6.9	4.07	30	81	0
1 c. spinach leaves	0.8	2.86	40	24	—
1 c. broccoli, cooked	4.7	1.37	75	39	0
1 c. corn, plain	4.0	0.72	0	24	—

Recommended Dietary Allowances (RDA) for young women 19-50 y are as follows: iron = 18 mg/d, calcium = 1,000 mg/d, magnesium = 310-320 mg/d, vitamin D = 5 µg/d, and vitamin K = 90 µg/d. Food items not analyzed for the nutrient are indicated with —. Data from Food Processor, ESHA Research, Salem, OR.

iron in these two meals (21.7 mg total) is from plant sources (approximately 20.8 mg), which has an absorption rate of 2% to 25%, whereas the heme iron in the chicken (0.91 mg) has an iron rate absorption of 5% to 35% (1). Assuming a 15% and 8% absorption rate for the heme and plant iron (non-heme), respectively, an active female may absorb approximately 1.8 mg/day from these two meals, which is enough to cover the 1.3 to 1.5 mg/day of iron she may lose. The amount of iron lost will depend upon menstrual blood losses. Active women also may have higher iron losses because of sweat and fecal losses.

**Bone-Building Nutrients**

Poor intake of the primary bone building nutrients (protein, calcium, magnesium, vitamin D) continues to be a problem for some active women. Many women eliminate dairy products from their diet at a young age because of lactose intolerance, vegetarian lifestyle, or a dislike for milk. In addition, some individuals substitute soda beverages, either full sugar or diet, for milk without realizing the impact this choice has upon the intake of bone nutrients, especially calcium, magnesium, vitamin D, and protein. Three servings of milk a day (e.g., three 8-oz servings of 1% milk) will provide approximately 300 kcal/day and all or most of an active women's calcium, vitamin D, B12, and riboflavin needs, 50% of the vitamin A required, and 25% to 30% of the protein, vitamin K,

zinc, and magnesium needs each day. Thus elimination of dairy, especially milk, from the diet requires careful planning to make sure that these nutrients are consumed in other foods. Dairy substitutes (e.g., soy milk) or other dairy foods, such as yogurt and cottage cheese, can be used instead of milk, but they are not typically fortified with vitamins A and D. Thus you need to read the labels carefully to be sure you are getting these nutrients in the dairy products you buy. The Table also provides the content of calcium and other bone nutrients found in selected foods. Fluoride and vitamins C and K also are important for bone health but are typically found in other places in our diet. Fluoride, which plays a critical role in the strengthening of bones and teeth, is found in foods grown in fluoride containing soil and is added to many water supplies and toothpastes. Vitamin C, which is necessary for healthy collagen formation, is found in many fruits and vegetables. Vitamin K is important for the production of osteocalcin, a protein in bone that helps with bone formation. Vitamin K is found in some foods, such as leafy greens and cruciferous vegetables, but also is made in the gut.

**Summary**

Encourage the active women you work with to know their iron status and have it checked regularly. If status is low, help them identify steps to improve their status or recommend them to a dietitian or health professional. Consumption of adequate amounts of the bone-building nutrients when

women are young and still laying down bone is imperative to assure the peak bone mass. Taking steps to improve these common nutrition problems can dramatically improve health and the ability to perform physical activity.



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