

# Nutrition News

Department of Human Nutrition



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## Eat Energy Dense Foods to Reduce Food Cost

Today's economy has caused many households to think about how to curb monthly expenses such as food, entertainment, utilities, and transportation. The Volumetrics Eating Plan, created by Dr. Barbara J. Rolls of Penn State University, and typically used for weight loss, can help trim the food budget while providing nutrient-dense foods.

Research has shown that dietary intake plays an important role in one's health and the prevention of many chronic diseases. The Volumetrics Eating Plan encourages individuals to consume high water and fiber-containing foods such as fruits, vegetables and whole grains, which have been associated with decreased risk of many diet-related chronic diseases such as obesity, high blood pressure, diabetes, cardiovascular disease, asthma, osteoporosis, and some cancers.

Following the Volumetrics Eating Plan might appear at first to be too expensive, because of high prices associated with fruits,

vegetables and whole-grain products. However, according to a March 2008 USDA Economic Research Report, it does not cost more money to eat a healthy diet than an unhealthy diet. On the average, low-calorie, high nutrient-dense foods such as fruits and vegetables are cheaper than high-calorie, low nutrient-dense foods such as pastries, chips, or sodas.

Taste, cost or perceived value, and convenience are primary reasons why individuals eat what they eat. Individuals also eat to feel full or satisfied. The Volumetrics Eating Plan focuses on that feeling of fullness (satiety) after a meal. Rolls and Barnett reported "most people eat the same weight of food at meals; if that amount is lower in energy density, [they would] still feel full." Energy density (ED) is defined as the "ratio of calories to the weight of food" or calories per gram. It measures how much energy one would get from a given amount of food. A lower ED is desirable. For example, one apple weighing 138g has

80 calories and one slice of apple pie weighing 128g has 480 calories. To calculate energy density, divide the number of calories by the weight in grams:  $80 \text{ cal} / 138\text{g} = 0.6 \text{ ED}$  for the apple and  $480 \text{ cal} / 128\text{g} = 3.8 \text{ ED}$  for the slice of apple pie. There is more than 6 times the energy associated with the slice of apple pie than the apple of similar weight.

To lower the ED of foods in the diet, one should strive to eat more foods high in water and fiber such as fruits and vegetables more often than fruit or vegetable juices because the juices contain little or no fiber. Other low ED food choices include whole grains, soups and stews, fiber-rich cereals, beans and legumes and low-fat protein sources. Foods high in both water and fiber strongly influence satiety, thus consuming foods high in water and fiber will lead to a quicker sensation of fullness. This allows a reduction in the amount of food eaten, and ultimately a decrease in money spent on food.

References:

1. Nutrition Facts Cards. Retrieved April 13, 2009 from <http://www.fns.usda.gov/tn/Resources/>
2. USDA. 2008. Price trends are similar for fruits, vegetables, and snack foods. *Economic Research Report*, 55.
3. French, S.A. 2003. Pricing effects on food choices. *The Journal of Nutrition*, 133, 841S-843S.
4. Rolls, B. and Barnett, R. A. *Volumetrics*. HarperCollins Publishers, Inc., 2000.

For more information about healthy eating, contact your local extension office.  
The Food Assistance Program can help people of all ages with low income buy nutritious foods for a better diet.  
To find out more, call toll-free 1-888-369-4777.

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