

Geriatric Nutrition

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The United States is seeing a significant increase in the numbers of older adults relative to the general population due to people living longer. The average life expectancy for adults in the U.S. is 76 for men and 81 for women-An average of 78.7 overall. This represents an increase of almost 8 years since 1970 (1).

During the twentieth century, life expectancy rose from approximately 50 years to over 75 years among the world's wealthiest populations (2). This increase can be attributed to a number of factors including improvements in public health, nutrition and medicine. Vaccinations and antibiotics greatly reduced deaths in childhood. Health and safety in manual workplaces improved and fewer people smoked. These factors, when coupled with a decline in the birth rate, have resulted in many major industrial countries facing an aging population.

Danish researchers report some encouraging news for aging populations in the journal *Lancet* (3). They compared two groups of people in their 90's, and found that those born more recently scored higher on cognitive function tests than those born earlier. This is an astronomically significant finding because we now have evidence that not only are people living longer, but do so with more of their mental faculties intact.

Concomitant with an increased lifespan, therefore, is the ability seniors now have of either recreational enjoyment or advancement of career goals should they so wish. Lifestyle factors

such as diet and exercise during their younger years will obviously play a part in how active and mentally alert they may be in their 90's. Unfortunately, malnutrition is sadly a common situation for many seniors.

Causes of Malnutrition

Nutritional status may be affected by decreased mobility or the lack of transportation to shop for food. Preparation of food may be hampered by physical limitations as a result of arthritis. Although we are a wealthy country, there are those among us without the means to afford food that has quality protein. Alcoholism, depression, medication side effects, dehydration, anorexia, and dental difficulties are all potential contributing factors that can result in malnutrition.

Consequences of malnutrition for older adults

Anyone reading this who has gone through his fifth decade into his sixth or seventh is well aware of the fact that loss of muscle mass occurs with aging. It is called "sarcopenia". Sarcopenia typically appears in the fourth decade of life and accelerates after the age of 75 (6). The implications of sarcopenia for the elderly can be devastating. It is known to be a factor in disability, reduced ability to cope with major illnesses, and is thus a contributing factor in mortality (7).

Our bodies suffer if our protein supply is inadequate. Protein is critical for us to have the ability to fight infection, heal wounds, maintain skin elasticity and be able to recuperate from surgeries or illnesses (4). Consumption of micronutrients found in protein rich foods may also be limited leading to deficiencies of, Vitamins B12, A, C, D, calcium, iron, and zinc. Thin, elderly women are most at risk according to geriatric studies (5).

Dietary protein adequacy is critical because total body protein decreases as aging progresses. Loss of skeletal muscle is the most noticeable sign of this although organ tissue, blood components, and antibodies are all affected.

The protein we consume has both a structural and a physiological role. It is the source of amino acids which serve as the building blocks for not only the tissues of the body but the various substances and entities that help maintain homeostasis. This includes DNA, enzymes, antibodies, hormones, maintenance of our acid base balance, and growth in general.

Actin and myosin are two proteins which contribute to the formation of muscle tissue. They come from amino acids which are ingested in the protein we eat. To learn more about the basics of protein and amino acids I refer our readers to the article on our website entitled "What's So Great About Protein" (8).

When we lose muscle we are also losing part of our total body protein composition. Loss of muscle mass with age is the most noticeable manifestation of protein loss but many organ systems and bodily defense mechanisms are affected as well (4).

Osteoporosis is a major health problem that occurs with aging. It is most common in women as a result of hormonal changes accompanying menopause but is also a health risk for men.

Osteoporosis is most commonly thought of as thinning or loss of bone mass. Both estrogen and testosterone deficiency that occur as a normal consequence of aging are potential etiologic factors.

Malnutrition can also be a major contributing factor. Bone is an active tissue that is continually being formed and broken down. Protein is essential for bone health in that it is responsible for the formation of collagen which is a protein component of bone. Amino acids from dietary protein intake are used to form enzymes which play an active role in the normal process of bone turnover (9).

What needs to be done to prevent the consequences?

Calcium

- Essential for bone formation.
- Supplement your diet with 1000mg. of elemental calcium.

Vitamin D

- Vitamin D is necessary for calcium absorption.
- Supplement your diet with 800-1000IU of vitamin D3.

Fruits & Vegetables

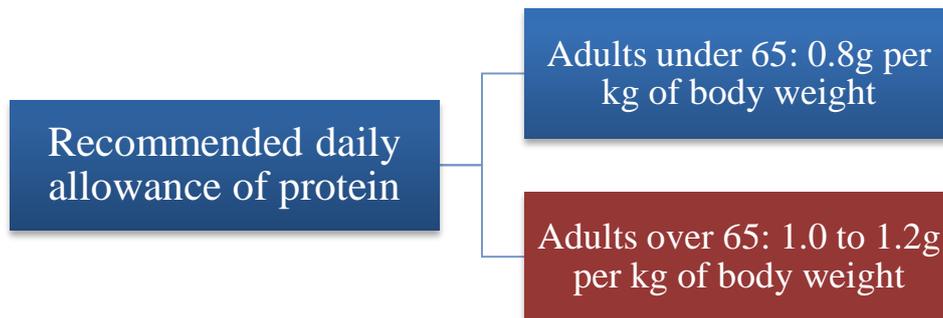
- They will supply antioxidants - slows the formation of free radicals.
- Antioxidants may also be taken in supplement form.

Adequate intake of calcium is essential for bone formation. An accepted guideline is to supplement your diet with 1000mg. of elemental calcium. Vitamin D is also necessary to absorb calcium from the intestinal tract and we now know that many people are deficient in Vitamin D (10). A common recommendation is to supplement your diet with 800-1000IU of vitamin D3. Always check with your family doctor before taking these or any other supplements as every case can be different.

If you are not eating a well-balanced diet it is wise to take a quality multivitamin-mineral supplement daily. In addition to calcium and vitamin D, the following substances play a role in bone formation: Magnesium, Vitamin K, Vitamin C, Zinc, Boron, Copper, Silicon, Manganese, and Vitamin B12 (11).

The addition of fresh fruits and vegetables to the diet will supply antioxidants which slow the formation of free radicals which cause tissue damage associated with aging. Antioxidants may also be taken in supplement form.

Protein requirement for older adults



The current recommended daily allowance of protein is 0.8 grams per kilogram of body weight (1kg. =2.2lbs.) (4). Older individuals do not manufacture muscle and other significant protein substances as well as their younger counterparts and therefore they require a higher amount of quality protein.

Studies from the American Geriatric Society (12) and geriatric research centers (4) recommend a protein intake of 1.0-1.2g per kg for adults over 65. This would allow them to maintain a more beneficial nitrogen balance which is necessary for recuperation from illness or surgery.

Persons who are very physically active, have an infection, or heightened metabolic need may require even a greater amount. The effects of aging may reduce the ability of the body to absorb and synthesize nutrients. Patients with chronic kidney disease should check with their physician regarding the amount of protein in their diet as sometimes a lower amount is indicated.

There is a misperception that frail elderly people should adhere to the same low-fat, low-calorie diet that is recommended for the general population. Although the restriction of fat and cholesterol containing foods makes sense in the younger generations, the restriction of fat or cholesterol in the diet of a malnourished eighty five year old woman is not warranted. This group needs calories in order that their basic physiologic functions continue and they survive. Elders who have experienced weight loss should eat what they like. One can incorporate eggs, cheese, and peanut butter...even ice cream into the diet.

Aging is a process that is different for every individual. The goal is “productive aging”. Being aware of the important role that nutrition plays and the input we each have in determining our future abilities can help us achieve that goal.

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