

Senior Nutrition, Fitness, and Healthy Lifestyles

Defining Generic Key Terms and Concepts

- **The 70+ Food Pyramid:**

The 70+ food pyramid was developed by Dr. Robert B. Russell of Tufts University and the Health and Nutrition Research Centre, along with a team of nutrition specialists to help seniors maintain balanced diets. The base of the pyramid focuses on eight or more servings of water or liquids. According to the USDA, seniors, compared with other segments of the population, have impaired responses to reduced body water. Therefore, they are most vulnerable to dehydration. Research also indicates that humans lose their thirst sensation as they age. As a result, many seniors do not drink enough fluids. To make matters worse, certain medications cause fluid imbalances within the body. These circumstances can lead to dehydration, kidney problems and constipation. The pyramid addresses the fact that seniors tend to eat less and consume fewer calories than younger people and that they do not get the recommended amount of nutrients. It is narrower than the traditional food pyramid because seniors are less active and require less food to maintain their weight. However, they do require higher levels of specific nutrients, like antioxidants to defend against free-radical damage associated with aging, vitamin D and calcium to keep bones strong, and folic acid to retain mental acuity and reduce incidence of stroke and heart disease. To get these vital nutrients, the pyramid emphasizes nutrient dense foods like darker coloured vegetables (spinach, broccoli, romaine lettuce vs. iceberg lettuce, and sweet potatoes or squash vs. white table potatoes) and colourful fruits that have higher levels of vitamins (strawberries, mangos, peaches, apricots vs. apples). To ensure adequate fibre intake, the pyramid recommends whole grain products. Many older people have problems with bowel function and need to be encouraged to get enough fibre by eating oranges and carrots, not just drinking the juice and to eat legumes like beans and lentils instead of meat at least twice per week (i.e. brown rice vs. white rice). High fibre foods are also associated with lower cholesterol levels and reduced risk of cardiovascular disease and cancer. As with the traditional pyramid, the modified food pyramid suggests using fats, oils, and sweets sparingly. It is particularly important for older people to limit their intake of desserts and snacks like cookies and cakes that contribute a lot of calories but have few nutrients.

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- **U.S. MyPlate and the Canadian Food Rainbow**

The U.S. MyPlate and Canada's new Food Rainbow recommend choosing the following foods more often -whole grain and enriched products, dark green and orange vegetables and orange fruit, lower fat milk products and leaner meats and meat alternatives, poultry and fish as well as dried peas, beans and lentils. The food guides and other excellent resources on healthy eating, including an interactive program to create your own personal food guide and to record personal eating and exercise habits are available on both the U.S MyPlate Website <http://www.choosemyplate.gov/food-groups/> and the Health Canada website at www.hc-sc.gc.ca. Look under food and nutrition.

- **Functional Fitness:**

Functional fitness refers to the ability to successfully carry out specific, fundamental activities of daily living (ADLs). Functional fitness relates to physical independence in terms of:

- Mobility (standing, walking, propelling a wheelchair)
- Self-care (bathing, dressing, eating,)
- Maintaining a living environment (preparing meals, doing necessary housework, driving, reaching and lifting needed objects)
- Pursuing life interests (gardening, caring for pets, playing with grandchildren, and recreational activities)

- **Aerobic and vital capacities:**

Aerobic capacity is the body's ability to process oxygen within a given time. The process of oxygenation includes the body's ability to perform the following tasks.

- Rapidly breathe amounts of air into the lungs to oxygenate blood
- Forcefully deliver large volumes of blood via the pumping action of the heart
- Effectively transport oxygen to all parts of the body through the blood stream

By age 65, aerobic capacity is typically 30 – 40 percent smaller than in young adults. However, studies indicate that the decline is less in seniors who exercise regularly.

Forced Vital Capacity refers to the amount of air that can be taken in and breathed out rapidly in one very deep breath and is a measurement of lung function. It reflects the integrity of the whole respiratory system: the chest muscles and diaphragm, the central nervous system control mechanisms, and the elasticity of the lungs. VC declines approximately 40 percent between youth and 70 years of age.

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Core Concepts, Definitions and Practice Questions

- **HDL and LDL Cholesterol:**

Cholesterol, a fatty substance, is a necessary component of the body. Bound to the proteins, cholesterol circulates in the bloodstream as *lipoproteins*. Cholesterol is commonly divided into two categories: good cholesterol, known as HDL (high density lipoprotein) and bad cholesterol, known as LDL (low density lipoprotein). The key to managing blood cholesterol is to increase good cholesterol and decrease bad cholesterol. Exercise promotes higher levels of the beneficial HDL and lowers the level of LDL. Lowering body fat and quitting smoking also help. Adjusting one's eating and nutritional habits in favour of a low cholesterol, lean, diet will help lower levels of LDL. LDL contributes to the development of heart disease by causing waxy, obstructive plaque build up within the coronary arteries. Obesity, especially fat around the abdomen correlates with low HDL concentrations and presents a serious risk factor for arteriosclerosis and adult onset diabetes. HDL does the opposite and appears to act as a scouring agent, cleansing the arteries of plaque.

During the course, as a PROFESSIONAL, you should be listening for the following:

- ***Sarcopenia:*** Sarcopenia is an overall weakening of the body caused by a change in body composition in favour of fat and at the expense of muscle. Diet, proper nutrition and exercise can increase seniors' chances of aging more slowly.
- ***The benefits of aerobic exercise:*** Seniors need aerobic exercise to maintain the ability of their heart and cardiovascular system to respond to stress. Other benefits include lowering blood pressure as blood flows more easily through the veins and arteries, blood levels of LDL (bad) cholesterol and triglycerides drop, but good cholesterol (HDL) rises, reducing the risk of heart disease. Regular aerobic exercise can also bring about a large increase in the muscles' of oxidative capacity in seniors. Further, moderate exercise is an excellent way to burn fat.
- ***Value of nutritional supplements for seniors (especially liquid forms):*** Sound nutrition helps our bodies function well and may limit or reverse damage resulting from previously poor eating habits. However, seniors often are nutritionally insufficient in the following areas: intake of several nutrients including folate, vitamin C, vitamin E, intake of vegetable and meat groups, and dietary variety. Seniors are also at higher risk of being underweight. The few studies undertaken among frail seniors showed that providing nutritional supplementation (especially a liquid supplement) along with dietary follow-up results in significant improvement in nutritional status.

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Core Concepts, Definitions and Practice Questions

Additional Thought-Provoking Questions

1. What are ‘biomarkers of functional age’?

- Biomarkers refer to the key physiological factors associated with aging. Biomarkers of functional age estimate the rate at which the very fundamental processes of aging occur within individuals.

2. What are some of the “biomarkers” we can look for (in our family members, ourselves, our clients/patients)? List: We should look for measurements of lean body mass as measured by the Body Mass Index (BMI); strength; basal metabolic rate (BMR); and body fat percentage.

3. Our bodies are made of ‘body fat’ which is metabolically inactive and energy storage tissue.

4. Describe why we should have more muscle than fat (i.e. the benefits).

Muscle is responsible for the vitality of the whole physiological apparatus. The key to senior rejuvenation is building muscle. Studies show that a high ratio of muscle to body fat on the body offers the following benefits:

- increases in metabolism help to burn body fat and alter body composition
- increases aerobic capacity – the health of one’s cardiovascular system – because more working muscles consume oxygen
- muscle use of more insulin, greatly reducing the chances of developing diabetes
- increases levels of the beneficial HDL cholesterol in the blood.

5. HDL and LDL are two types of cholesterol—what do HDL and LDL represent and which is good cholesterol and which is the bad? What helps control ‘the bad’?

HDL (high density protein) is the good cholesterol and LDL (low density protein) is the bad cholesterol. Appropriate exercise lowers levels of LDL, while increasing levels of HDL. Adjusting ones’ eating and nutritional habits to healthier choices also helps to lower levels of LDL.

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Core Concepts, Definitions and Practice Questions

Review Questions

1. What does the 'base' level of the 70+ Food Pyramid represent?
 - A. Fruits and vegetables
 - B. Low and non fat dairy products
 - C. Protein sources such as lean meat, fish or eggs
 - D. Water and/or other beneficial fluids
2. A high ratio of 'muscle to body fat' will result in all of the following **EXCEPT**:
 - A. An increase in metabolism to help burn body fat and alter body composition
 - B. Maintenance of higher levels of LDL-cholesterol in the blood
 - C. Triggering muscles to use more insulin and reduce chances of developing diabetes
 - D. Increasing aerobic capacity
3. Which statement correctly describes HDL and LDL cholesterol relationships as a factor in heart disease?
 - A. HDL cholesterol causes plaque build up in coronary arteries
 - B. Total cholesterol level is the best predictor of heart disease
 - C. The key to managing cholesterol is to increase HDL and decrease LDL cholesterol
 - D. Exercise is not particularly important in raising HDL cholesterol levels



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Answer Guide to Review Questions:

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1. d
2. b
3. c