

## Learning in Retirement: Nutrition & Longevity

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“Achieving wellness through awareness”

### Slide #3

#### Goals

- 1) Staying Active
  - a) Take care of daily needs
- 2) Avoid Chronic Disease/Stay Healthy
  - a) Choose Foods for health
- 3) Maintain quality of health
  - a) Life is more than living
- 4) Enjoy retirement!

### Slide #4

- 1) Take up physical activity you enjoy
  - a) Hiking, Biking, Swimming, Golfing, Fishing, Hunting
  - b) Weight bearing combined with stretching (gym or home gym)
  - c) Relaxing workout
  - d) Playing with the kids/grandkids
  - e) Taking a walk
  - f) Being out in nature
  - g) Other workouts
  - h) Doing yard work
  - i) Housecleaning

### Slide #5

- 1) Physical activity improves stamina
- 2) Exercise stimulates the immune system; improving natural defenses
- 3) Moving increases endorphins
- 4) Reducing Stress & Anxiety
- 5) Remember sitting is the new “smoking”
  - a) The best of choices can still be overcome by sitting

### Slide# 6

- 1) **Nutrient dense vs. Energy (calorie) dense**
  - i) **Nutrient dense**—food high in nutrients and relatively low in calories;
    - (1) Contain vitamins, minerals, complex carbohydrates, lean protein, and healthy fats
    - (2) Think whole foods!
  - ii) **Energy dense**—foods contain high concentration of calories per bite;
    - (1) Usually contain little or no vitamin, minerals, etc.
    - (2) Think grab-n-go foods
  - iii) **Enriched food vs. Fortified food**
    - (1) **Enriched**—foods with nutrients added back that were lost during processing
    - (2) **Fortified**—foods with added vitamins and minerals not originally part of the food

### Slide# 7

#### Super Foods or Super Hype

- 1) No scientifically based or regulated definition for superfood
  - a) Simply nutrient dense foods
- 2) Superfoods = Super sales
  - a) Billion-dollar marketing
  - b) 36% increase in sales
  - c) Key words: superfood, superfruit, supergrain

- 3) Downside
  - a) Hyperfocus on a few foods
  - b) Reduced dietary variety
  - c) Too much of some nutrients

Slide #8

Science of Nutrition

- 1) **Building Blocks of Health**
  - a) Vitamins, Minerals, Trace Compounds found in **Food**
    - i) Macronutrients
    - ii) Micronutrients
    - iii) Minerals
- 2) Water

Slide #9

- 1) Macronutrients
  - a) Needed by the body in large amounts; provide energy (calories)
  - b) Energy for basic bodily functions
  - c) Energy for movement and thought processes
- 2) Meet the Macronutrient players
  - a) Carbohydrates
  - b) Protein
  - c) Lipids (fats)

Slide #10

- 1) Carbohydrates
  - a) Fuel for high intensity exercise
  - b) Spares protein (to preserve muscle mass)
  - c) Fuel for the Central Nervous System (your brain!)
  - d) Types—simple and complex
  - e) Sugar, Starch, Fiber

Slide #11

- 1) Two main types of fiber
  - a) Many foods contain a combination of both fibers
  - b) Both types add to digestive health
- 2) Soluble
  - a) Dissolves in gastrointestinal fluids in stomach & intestines
  - b) Becomes a gel-like substance
  - c) Feeds “good” bacteria in large intestine
  - d) Health benefits
    - i) Cholesterol, blood sugar, limiting fat absorption, reduce risk cardiovascular disease
- 3) Insoluble
  - a) Does not dissolve in gastric fluids
  - b) Reduces constipation
  - c) Lowers risks diverticular disease, colon diseases

Slide #12

- 1) Carbs provide energy to sustain internal and external needs
  - a) Running and repairing tissues, muscles, organs, and more
- 2) Carbs spare muscle tissue from depletion
- 3) Carbs breakdown simply or complex for absorption
- 4) Glycogen is stored in the liver and muscles—result of “saving some for later”
- 5) Excessive carb intake will convert to fat in the body
- 6) Complex carbs lower disease risk factors
- 7) Fiber serves multiple functions in the digestive tract
- 8) Recommended Daily Allowance
  - a) Sedentary Individuals: 35-45% of your total daily calories should be carbohydrates
  - b) Exercises Regularly: 50% of your total daily calories should be carbohydrates
  - c) Athletes or persons involved in heavy training: 70% of your total daily calories should be carbohydrates (3.5-4.5 grams of carbohydrate per pound of body weight)

Slide #13

- 1) **Why is Protein Important?**
  - a) Tissue structure (part of organ tissues, muscle, hair, skin, nails, bones, tendons, ligaments and blood plasma)
  - b) Part of cell plasma membranes
  - c) Involved in metabolic, transport, and hormone systems
  - d) Make up enzymes that regulate metabolism
  - e) Involved in acid/base balance to maintain a neutral environment in our bodies
- 2) Classifications of Protein
- 3) Complete Protein
  - a) Contains all 9 essential amino acids
  - b) Animal products and a few plant products (soy, quinoa)
- 4) Incomplete protein
  - a) Does not contain all 9 essential amino acids (most fruits and vegetables)

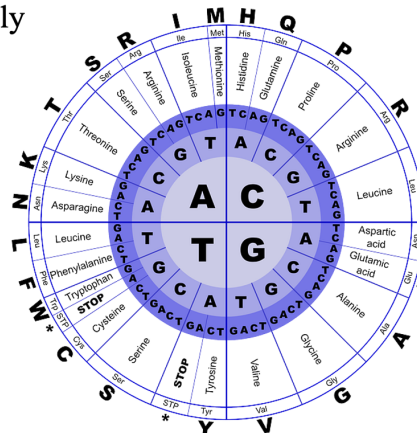
Slide #14

- Amino acids combine to form proteins
- **Essential Amino Acids**—9 amino acids cannot be manufactured by the body; must be obtained through food

Essential Amino Acids	Function in body
Histidine	produces histamine (neurotransmitter) that is vital to immune response, digestion, sexual function, sleep-wake cycles & production of myelin sheath (nerve covering)
Isoleucine	muscle metabolism, immune function, hemoglobin production and energy regulation
Leucine	helps regulate blood sugar levels, stimulates wound healing and produces growth hormones
Lysine	protein synthesis, hormone and enzyme production, energy production, immune function, production of collagen & elastin and the absorption of calcium
Methionine	metabolism and detoxification, tissue growth and the absorption of zinc and selenium
Phenylalanine	precursor for tyrosine, dopamine, epinephrine and norepinephrine
Threonine	plays a role in fat metabolism and immune function; principal part of collagen and elastin
Tryptophan	maintain proper nitrogen balance and is a precursor to serotonin
Valine	stimulate muscle growth and regeneration and is involved in energy production

## Non-Essential Amino Acids

- Non-Essential Amino Acids
  - Can be made by the body; are not needed daily
    - Alanine,
    - Arginine,
    - Asparagine,
    - Aspartate,
    - Cystine,
    - Glutamic acid,
    - Glycine,
    - Ornithine,
    - Proline,
    - Serine,
    - Tyrosine



#### Slide #16

- 1) Protein structures are contained in every part of the body
- 2) Amino acids are the building blocks of protein
- 3) Essential amino acids must be consumed in daily diet
- 4) Non-essential amino acids are manufactured within the body
- 5) Like carbs, 1 gram of protein provides 4 calories
- 6) Amount of protein needed depends on physical activity level
  - a) Sedentary Individuals: 0.36 grams of protein per pound of body weight
  - b) Recreationally Active: 0.45-0.68 grams of protein per pound of body weight
  - c) Competitive Athlete: 0.54-0.82 grams of protein per pound of body weight
  - d) Teenage Athlete: 0.82-0.91 grams of protein per pound of body weight
  - e) Body Builder: 0.64-0.91 grams of protein per pound of body weight
  - f) When restricting Calories: 0.364-0.91 grams of protein per pound of body weight
  - g) Maximum amount of protein the body can utilize: 0.91 grams of protein per pound of body weight

#### Slide #17

- 1) Roles of fat in the body
    - a) Energy reserve
    - b) Protects vital organs
    - c) Insulation
    - d) Transport fat soluble vitamins
  - 2) Saturated
    - a) Solid at room temperature
    - b) Found in animal products (fatty meats, milk, butter) and some plants (coconut)
    - c) Consume less than 10% of daily calories
  - 3) Unsaturated
    - a) Liquid at room temperature
    - b) Found in plants (vegetables, nuts, seeds)
      - i) Monounsaturated—olive oil, avocados, almonds, hazelnuts, pecans, pumpkin & sesame seeds
      - ii) Polyunsaturated—Omega 3 rich; soybean & flaxseed oils, walnuts, fish
  - 4) Trans-fat
    - a) Occur from heating liquid vegetable oils
    - b) Negative health impacts—inflammatory, create insulin resistance, potential heart & vessel disease
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- 1) Cholesterol
    - a) Cholesterol is a waxy, odorless substance made by the liver
    - b) Little is absorbed from foods; cholesterol from food does not contribute to high blood cholesterol
    - c) Major component of all cell membranes and is used to make essential molecules such as hormones, fat-soluble vitamins, and bile acids
  - 2) Triglycerides
    - a) Found in most foods we eat—low levels
    - b) Excess calories, sugar and alcohol are converted to triglycerides and stored in fat cells
    - c) Contribute to health detriments—cardiovascular, diabetes, pancreatitis
    - d) Differences between cholesterol & triglycerides
    - e) Triglycerides store unused calories and provide your body with energy.
    - f) Cholesterol is used to build cells and certain hormones.
  - 3) 20-35% of your total daily calories should come from fat
  - 4) Less than 10% of total daily calories should come from Saturated

#### Slide #19

##### **Vitamins**

- 1) Water-soluble—Must be replaced daily
  - a) Will dissolve in water and then be absorbed into the body
  - b) Needed in balanced ratios (if supplement)
  - c) Vitamin C
  - d) Vitamins B-1 (thiamine), B-2 (riboflavin), B-3 (niacin), B-5 (pantothenic acid), B-6 (pyridoxine), B-7 (biotin), B-9 (folate), B-12 (cobalamin)
- 2) Fat-soluble
  - a) Require the presence of fat for absorption into the body
  - b) Toxic in mega-doses
  - c) Stored in liver and adipose tissue (not needed daily)
  - d) Vitamin A, vitamin D, vitamin E, vitamin K

- i) Two forms of vitamin A—retinoids (animal products) and carotenoids (fruits & veggies)
- 3) Antioxidant vitamins
  - i) vitamin C, vitamin E, beta-carotene

## Water-Soluble... Vitamin C & B-Complex

<b>B-1 (Thiamine)</b>	<b>convert food into energy, plays a role in muscle contraction, and supports normal nervous system function; anti-stress, immunity</b>
<b>B-2 (Riboflavin)</b>	<b>break down and use the carbohydrates, fats, and proteins; important for body growth and red blood cells; anti-anxiety</b>
<b>B-3 (Niacin)</b>	<b>Over 300 cellular reactions; helps the digestive system, skin, and nerves to function; supports cellular energy production and boosts HDL cholesterol</b>
<b>B-5 (Pantothenic acid)</b>	<b>break down fats and carbohydrates for energy; produce hormones; needed for growth</b>
<b>B-6 (Pyridoxine)</b>	<b>over 100 cellular reactions; metabolize amino acid; new red blood cells; produce serotonin, melatonin and norepinephrine</b>
<b>B-7 (Biotin)</b>	<b>supporting healthy hair, skin and nails (Warning: high biotin intakes reduce B-2 absorption)</b>
<b>B-9 (Folate/Folic Acid)</b>	<b>fetal health; growth of red blood cells; fertility</b>
<b>B-12 (Cobalamin)</b>	<b>Regulates central nervous system; hemoglobin production; iron absorption; energy production (is reduced absorption in those taking proton-pump inhibitors, metformin GI compromise, and elderly)</b>

### Slide #21

- 1) B-1—whole grains, beans, spinach, kale, yeast, nuts, sunflower seeds, pork, and red meat.
  - 2) B-2—almonds, wild rice, eggs, Brussels sprouts, spinach, broccoli, salmon, and beef.
  - 3) B-3—beef, poultry, fish, legumes, nuts, eggs, beans, and green vegetables.
  - 4) B-5—organ meats, egg yolk, whole grains, avocados, nuts, lentils, broccoli, kale, and dairy products.
  - 5) B-6—dark green leafy vegetables, organ meats, beets, dates, avocados, beans, salmon, and bulgur
  - 6) B-7—strawberries, organ meat, yeast, pork, chicken, fish, cauliflower, egg yolks, and nuts
  - 7) B-9—dark green leafy vegetables, organ meats, beets, dates, avocados, beans
  - 8) B-12—animal products, does not occur in plants
  - 9) **DANGER!**
  - 10) Too much B-vitamins
    - a) high doses of niacin (vitamin B3) – more than 2-3 grams per day – can cause nausea, jaundice, and elevated liver enzymes.
    - b) Too much pyridoxine (vitamin B6) can be toxic, resulting in numbness, tingling, and even nerve damage. The current recommended maximum daily intake for B6 is 100 mg.
    - c) Findings from a recent study suggest that men who take high doses of vitamin B6 or vitamin B12 and smoke may be at increased risk of lung cancer.
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- 1) Vitamin A
    - a) Retinol—from animal products; Beta-carotene—from plants
    - b) Eyes, skin, mucus membranes, gene expression, bone growth, teeth, immunity, cell division
    - c) **Toxicity?** From food, No; from supplement, Yes!
  - 2) Vitamin D
    - a) Bones, immunity, muscle strength, neurological (brain, heart, peripheral nerves)
    - b) Signs of deficiency: bone and muscle loss, erratic nerve conduction, depression
    - c) **Toxicity?** Food no; from supplements, Yes!
  - 3) Vitamin E
    - a) Protects against free radicals (antioxidant)
    - b) **Toxicity?** Food no; supplements, Yes!
  - 4) Vitamin K
    - a) Gut bacteria produce vitamin K (k-1, k-2, k-3 is synthetic)
    - b) Blood clotting, bone health, protein production for kidneys, restricting blood vessels to cancer tumors

- 5) Vitamin A—need double beta-carotene to retinol; foods orange and dark leafy greens
  - a) toxicity dry, itchy skin, headache, nausea, and loss of appetite, bone fracture, dizziness, blurred vision
- 6) Vitamin D—Foods mushrooms, fish, fortified foods
  - a) Signs of toxicity include excess calcium in the blood, slowed mental and physical growth, decreased appetite, nausea and vomiting, mouth sores
- 7) Vitamin E—fruits and veggies; grains, almonds, hazel nuts, sunflower seeds; fortified cereals.
  - a) Too much vitamin E bleed risk; intensifies blood thinners, linked to prostate cancer
- 8) Vitamin K—green, leafy-vegetables, spinach, cauliflower, cabbage and broccoli, and certain vegetable oils including soybean oil, cottonseed oil, canola oil and olive oil

Slide #24

- 1) Fat-soluble vitamins are stored in the body for long periods of time, pose a greater risk for toxicity, and are only needed in small amounts.
- 2) Beta carotene is found in a variety of fruits and vegetables. It is an important antioxidant that converts to Vitamin A in the body.
- 3) Inadequate vitamin D, is a growing public health concern. Reduced sun exposure and inadequate diet contribute to the issue.
- 4) Vitamin E is an antioxidant that may offer protective effect if obtained through a diet rich in fruits and vegetables.
- 5) Bacteria in our gut produce vitamin K. It is also found in green leafy vegetables. A synthetic form (K-3) is used in cancer research/treatment.

## Minerals: Macrominerals (Major)

Mineral	Function	Foods
<b>Sodium</b>	<b>Fluid balance, muscle contraction, nerve transmission</b>	<b>Table salt, soy sauce; large amounts in processed foods; small amounts in milk, breads, vegetables, and unprocessed meats</b>
<b>Chloride</b>	<b>Fluid balance, Stomach Acid</b>	<b>Table salt, soy sauce; large amounts in processed foods; small amounts in milk, meats, breads, and vegetables</b>
<b>Potassium</b>	<b>fluid balance, nerve transmission, and muscle contraction</b>	<b>Meats, milk, fresh fruits and vegetables, whole grains, legumes</b>
<b>Calcium</b>	<b>bones and teeth; helps muscles relax and contract; important in nerve functioning, blood clotting, blood pressure regulation, immune system health</b>	<b>Milk and milk products; canned fish with bones (salmon, sardines); fortified tofu and fortified soy milk; greens (broccoli, mustard greens); legumes</b>
<b>Phosphorus</b>	<b>healthy bones and teeth; found in every cell; part of the system that maintains acid-base balance</b>	<b>Meat, fish, poultry, eggs, milk, processed foods (including soda pop)</b>
<b>Magnesium</b>	<b>Found in bones; needed for making protein, muscle contraction, nerve transmission, immune system health</b>	<b>Nuts and seeds; legumes; leafy, green vegetables; seafood; chocolate; artichokes; "hard" drinking water</b>
<b>Sulfur</b>	<b>Found in protein molecules</b>	<b>meats, poultry, fish, eggs, milk, legumes, nuts</b>

# Minerals: Microminerals (Trace)

<b>Iron</b>	<b>red blood cells, carries oxygen, energy metabolism</b>	<b>Organ meats; red meats; fish; poultry; shellfish (especially clams); egg yolks; legumes; dried fruits; dark, leafy greens; iron-enriched breads and cereals; and fortified cereals</b>
<b>Zinc</b>	<b>Part of enzymes needed to make protein; genetic material; taste perception, wound healing, normal fetal development, production of sperm, normal growth and sexual maturation, immune system health</b>	<b>Meats, fish, poultry, leavened whole grains, vegetables</b>
<b>Iodine</b>	<b>thyroid hormone, which helps regulate growth, development, and metabolism</b>	<b>Seafood, foods grown in iodine-rich soil, iodized salt, bread, dairy products</b>
<b>Selenium</b>	<b>Antioxidant, thyroid support</b>	<b>Meats, seafood, grains</b>
<b>Copper</b>	<b>needed for iron metabolism</b>	<b>Legumes, nuts and seeds, whole grains, organ meats, drinking water</b>
<b>Manganese</b>	<b>Part of many enzymes</b>	<b><u>Wide spread</u> in plant foods</b>
<b>Fluoride</b>	bones and teeth; helps prevent tooth decay	<b>Drinking water (either fluoridated or naturally containing fluoride), fish, and most teas</b>
<b>Chromium</b>	<b>Works closely with insulin to regulate blood sugar (glucose) levels</b>	<b>Unrefined foods, especially liver, brewer's yeast, whole grains, nuts, cheeses</b>
<b>Molybdenum</b>	<b>Part of some enzymes</b>	<b>Legumes; breads and grains; leafy greens; leafy, green vegetables; milk; liver</b>

## Slide #27

- 1) Adult humans are 60 percent water; our blood is 90 percent water
- 2) There is no universally agreed quantity of water that must be consumed daily.
  - a) Lubricates joints—Cartilage contains around 80 percent water
  - b) Forms saliva & Mucus—digest our food and keeps the mouth, nose, and eyes moist.
  - c) Oxygen transport—blood transports oxygen
  - d) Healthy skin—dehydration weakens skin; increasing skin disorders
  - e) Cushions brain, spine etc.; involved in neurotransmitter & hormone production
  - f) Regulates body temperature
  - g) Digestion
  - h) Flushes body waste
  - i) Airways—dehydration makes asthma worse
  - j) Nutrients—water soluble
- 3) Prevents kidney damage—prevents kidney stones

## Slide #30

- 1) Prevent Heart Attacks, High Blood Pressure, Artery Disease
  - a) fruits and vegetables, whole grains, nuts, fish, poultry, and olive or avocado oil
  - b) Limit deli meat and red meat
  - c) Avoid foods with added sugar, sodium, and trans-fats
  - d) Drink more water!
  - e) Stress less!
- 2) Reverse Heart Disease
  - a) Berries & citrus fruits, vegetables, oats, rice, beans, soy products, non-fat dairy, egg whites
  - b) Avocado, omega-3s—fish, pecans, walnuts, flaxseeds, tomatoes, broccoli, cauliflower, brussels sprouts, arugula, cabbage, beets, spinach
  - c) Green tea, cinnamon

## Slide #31

- 1) Type-2 Diabetes
  - a) Lack of adequate physical activity
  - b) Lack of weight management
  - c) Carrying extra belly fat (leads to insulin resistance)
  - d) Insulin resistance
    - i) Muscle, liver & fat cells unable to use insulin productively
  - e) Genetics

- 2) Reduce Risks
  - a) If overweight, loose 5-7% of body weight
  - b) Reduce body inflammation
  - c) Get at least 30-45 minutes of physical activity 5 days a week
  - d) Eat healthy foods **most** of the time
    - i) Less sugar, less fat
    - ii) Eat smaller portions
    - iii) Focus on lean protein, vegetables, fruit
    - iv) Limit starchy foods and breadstuffs

Slide #32

- 1) Mediterranean Diet!
  - a) Great Anti-inflammatory diet
  - b) Fish at least twice weekly (all except Tilapia)
    - i) Omega-3s reduce C-Reactive Protein & Interleukin-6
  - c) Nuts & Seeds
    - i) High in B-6; lowers inflammatory markers
  - d) Beans
    - i) 1 cup twice a week
    - ii) Lowers CRP
  - e) Fruits & Veggies
    - i) Antioxidants
    - ii) broccoli, spinach, lettuce, kale and cabbage, eggplant,
    - iii) tomatoes, red bell peppers and potatoes
    - iv) blueberries, cherries, raspberries, oranges, grapefruits & limes
  - f) Reduce Red Meat
    - i) Highly inflammatory
  - g) Reduce Gluten
    - i) Reduces C-Reactive Protein & Interleukin-6

Slide #33 Lungs

- Choose Complex Carbohydrates
  - *Whole grains, fruits, vegetables*
- Eat 20 to 30 grams of Fiber daily
  - *Nuts, seeds, fruit, vegetables*
- Eat Lean Protein Twice Daily
  - *help maintain strong respiratory muscles*
  - *Lean meat, poultry, beans*
- Drink Plenty of Water
  - *Reduces mucus*
  - Limit Simple Carbohydrates
  - *Cake, cookies, table sugar, candy*
- Limit Sodium
  - Limit edema
- Limit Trans fats & saturated fats
- Foods to Reduce Lung Inflammation
  - **Whole Grains** – Oatmeal, whole-wheat bread/wraps, brown rice.
  - **Nuts** – Walnuts, almonds, pistachios, cashews.
  - **Fatty Fish** – Salmon, mackerel, tuna, sardines.
  - **Green Leafy Vegetables** – Spinach, kale, collards.
  - **Fruits** – Strawberries, blueberries, raspberries, cherries.
  - **Beans** – Chickpeas, lentils, peas, kidney beans, black beans.
  - **Olive Oil** – Extra-virgin olive oil is the least processed or refined.
  - **Herbs and Spices** – Turmeric, garlic, ginger, cinnamon.
  - **Avocados** – Packed with potassium, magnesium, and heart-healthy fats.
  - **Tomatoes** – Rich in lycopene and contain folate.

Slide #34



# Foods for Fighting Dementia...

- MIND Diet (Mediterranean-DASH Intervention for Neurodegenerative Delay)
  - 3+ servings a day of **whole grains**
  - 1+ servings a day of **vegetables** (other than green leafy)
  - 6+ servings a week of **green leafy vegetables**
  - 5+ servings a week of **nuts**
  - 4+ meals a week of **beans**
  - 2+ servings a week of **berries**
  - 2+ meals a week of **poultry**
  - 1+ meals a week of **fish**
  - Mainly **olive oil** if added fat is used



## • **Restricted Food Items**

- Less than 4 servings a week of red meat (including beef, pork, lamb, and products made from these meats)
- Less than one serving a week of **cheese** and fried foods
- Less than 1 tablespoon a day of butter/stick margarine
- Less than 5 servings a week of sweets
  - Choose applesauce & other low sugar options