The Essential Nutrients for Healthy Aging

Meghan Skiba, PhD, MS, MPH, RDN

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Disclaimer

• This talk is for general information purposes and is not intended to replace personalized medical or nutritional advice from your trusted medical professional. A health care provider should be consulted regarding your specific medical concerns or treatments. A registered dietitian nutritionist (RDN) can counsel and make recommendations based on your current health and medications aligned with your personal health goals.

• I have no conflicts of interest to disclose.
Rapidly Growing Aging Population

Source: US Census Bureau - The Graying of America
Chronic Disease Burden Among Older Adults

Data Source: Centers for Disease Control and Prevention Chronic Disease Indicators Data. https://nccd.cdc.gov/cdi
Decreasing Dietary Quality Among Older American Adults

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Functional Consequences of Aging

Cognitive
• Delayed processing speed
• Impaired memory and language
• Executive function decline

Physical
• Difficulties in daily activities
• Decreased balance and grip strength
• Mobility loss
• Frailty/sarcopenia

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MEDITERRANEAN-DASH INTERVENTION FOR NEURODEGENERATIVE DELAY (MIND) DIET

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Higher MIND diet score associated with slower decline in cognitive function

doi.org/10.1016/j.jalz.2015.04.011

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<table>
<thead>
<tr>
<th>Foods to Eat</th>
<th>Recommended Serving</th>
<th>Foods to Limit</th>
<th>Serving Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green leafy vegetables</td>
<td>½ – 1 cups / day</td>
<td>Red and processed meats</td>
<td>&lt; 3 – 5 oz. / week</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>½ cups / day</td>
<td>Butter and stick margarine</td>
<td>&lt; 1 tsp / day</td>
</tr>
<tr>
<td>Nuts</td>
<td>5 oz. / week</td>
<td>Cheese (whole fat)</td>
<td>&lt; 1 oz. / week</td>
</tr>
<tr>
<td>Berries</td>
<td>½ cups 5 times / week</td>
<td>Pastries, candy bars, sweets</td>
<td>&lt; 4 servings / week</td>
</tr>
<tr>
<td>Beans/legumes</td>
<td>½ cups 3 times / week</td>
<td>Fried foods and fast food</td>
<td>&lt; 1 meal / week</td>
</tr>
<tr>
<td>Whole grains</td>
<td>3 servings / day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish (not fried)</td>
<td>3 – 5 oz. / week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>3 – 5 oz. 2 times / week</td>
<td></td>
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</tr>
<tr>
<td>Extra virgin olive oil</td>
<td>2 tbsp / day</td>
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</tr>
</tbody>
</table>
Quick Take: MIND Diet for Cognitive Decline
doi: 10.1056/NEJMdo007170
ADD A VARIETY OF FRUITS AND VEGETABLES
Evidence of dietary supplements containing phytonutrients in humans remains limited
# Rainbow-Hued Antioxidants

<table>
<thead>
<tr>
<th>Color</th>
<th>Antioxidants</th>
<th>Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue &amp; Purple</td>
<td>Anthocyanins/Anthocyanidins</td>
<td>Blackberries, Eggplant, Plums</td>
</tr>
<tr>
<td></td>
<td>Resveratrol</td>
<td>Grapes, Mulberries, Lingonberries, Blueberries</td>
</tr>
<tr>
<td>Green</td>
<td>Chlorophyll</td>
<td>Spinach, Collard Greens, Parsley, Celery, Arugula</td>
</tr>
<tr>
<td></td>
<td>Isothiocyanates</td>
<td>Broccoli, Brussels Sprouts, Boy Choy, Kale, Cabbage</td>
</tr>
<tr>
<td></td>
<td>Isoflavones</td>
<td>Green Peas, Soybeans, Lima Beans, Green Lentils</td>
</tr>
<tr>
<td>Orange &amp; Yellow</td>
<td>Beta-carotene</td>
<td>Carrots, Pumpkins, Sweet Potatoes, Cantaloupe</td>
</tr>
<tr>
<td></td>
<td>Quercetin</td>
<td>Apples, Broccoli, Cherries, Grapes, Onion</td>
</tr>
<tr>
<td></td>
<td>Lutein/Zeaxanthin</td>
<td>Corn, Tangerines, Peppers, Papayas, Grapefruit</td>
</tr>
<tr>
<td></td>
<td>Hesperidin/Limonene</td>
<td>Lemons, Oranges, Mandarin</td>
</tr>
<tr>
<td>Red</td>
<td>Lycopene</td>
<td>Watermelon, Tomato, Guava, Red Bell Peppers</td>
</tr>
<tr>
<td></td>
<td>Anthocyanins/Betalains</td>
<td>Raspberries, Radishes, Beets, Dragon Fruit, Prickly Pear</td>
</tr>
<tr>
<td></td>
<td>Ellagic Acid</td>
<td>Strawberries, Cranberries, Pomegranates, Cherries</td>
</tr>
<tr>
<td>Tan &amp; White</td>
<td>Anthoxanthins</td>
<td>Potatoes, Mushrooms, Cauliflower, Parsnips</td>
</tr>
<tr>
<td></td>
<td>Allicin</td>
<td>Garlic, Onion, Leeks, Shallots</td>
</tr>
</tbody>
</table>
1 small piece fruit, such as a 2-inch peach or large plum
1/4 cup dried fruit
1 cup uncooked spinach
6 baby carrots
1/2 cup 100% orange juice
1/2 medium grapefruit
1/2 cup broccoli florets
1/2 large (3-inch diameter, 3-3/4 inch long) red pepper
1/8 medium cantaloupe
1/2 cup grapes
1/2 cup cooked kidney beans
1/2 cup cooked green beans
Food Combos: Synergistic Bioavailability

- Turmeric + Black Pepper
- Tomato + Garlic
- Olive Oil + Sweet Potato
- Orange + Kale
- Lemon + Green Tea
- Almonds + Apples
- Rosemary + Red Meats
- Strawberries + Spinach
- Garbanzo Bean + Beet Root
- Raspberry + Chocolate
- Milk + Coffee
- Salmon + Broccoli

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INCREASE BENEFICIAL FATS

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Omega-3 Fatty Acids
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1/2 medium avocado has 3 teaspoons of oil

4 large ripe olives have 1/2 teaspoon of oil

1 tablespoon of peanut butter has 2 teaspoons of oil
SELECT LEAN PROTEINS

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Essential Amino Acids

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doi: 10.1093/nutrit/nuy073
BCAAs*  
*Isoleucine, Leucine, Valine

protein intake

appetite regulation:
amino acid imbalance
protein leverage

blood BCAA
leucine

MTOR, insulin

muscle protein

synthesis ↔ breakdown

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Complete Proteins

- Fish
- Poultry
- Milk
- Eggs
- Quinoa
- Buckwheat
- Chia Seed
- Hemp Seed
- Soy
- Brown Rice + Black Beans
- Oatmeal + Peanut Butter
- Garbanzo + Sesame

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1/2 ounce nuts (12 almonds, 24 pistachios, or 7 walnut halves)

1 tablespoon peanut butter

1 cup yogurt

1-1/2 ounces hard cheese, such as cheddar, mozzarella, Swiss, or Parmesan

1/4 cup tofu

1 egg

1 cup milk or calcium-fortified soy beverage

2 cups cottage cheese

2 tablespoons hummus

1/2 cup split pea, lentil, or other bean soup

1/3 cup shredded cheese

1 cup pudding made with milk
CHOOSE WHOLE GRAINS

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Dietary Fiber

Adequate Daily Intake for Fiber

<table>
<thead>
<tr>
<th>Age</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-50 years</td>
<td>38 grams</td>
<td>25 grams</td>
</tr>
<tr>
<td>51-70 years</td>
<td>30 grams</td>
<td>21 grams</td>
</tr>
<tr>
<td>71+ years</td>
<td>30 grams</td>
<td>21 grams</td>
</tr>
</tbody>
</table>


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Gut Microbiome

Individual age-related changes and the gut microbiome

Social and societal influences on the microbiome of older people
- Human contact
- Extended family
- Visitors
- Aloneness
- Household pets
- Accommodation: home or residential care
- Life indoors

Altered nutrient intake
- Smell and taste
- Dentition

- Difficulty swallowing
- Disturbed peristalsis

Achlorhydria

Age-related disease affecting the microbiome
- Infections
- Antibiotic usage
- Polypharmacy
- Comorbidities

↓ Digestive enzymes
↓ Mucosal immunity
↓ Colonic motility

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Prebiotics & Probiotics

**PREBIOTIC**
- Carbohydrates which are resistant to digestion process and are fermented in the colon
- Found in foods and supplements
- Consist of both soluble and insoluble fiber types

**PROBIOTIC**
- Microorganisms (live bacteria and yeast) that ferment fibers in the colon
- Found in foods that are naturally fermented and supplements
Evidence of dietary supplements containing prebiotics and probiotics in humans remains limited.
1 slice bread
1 small (2-1/2-inch diameter) muffin
1 cup breakfast cereal (flakes, rounds, or puffed)

1/2 cup cooked cereal, rice, or pasta
3 cups popcorn
1 small (6-inch diameter) corn or flour tortilla
LIMIT PROCESSED FOODS

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### Nutrition Facts

**Serving size** = portion of food containing quantity of nutrients listed below

**Servings per container** = number of portions in one package

<table>
<thead>
<tr>
<th>Amount per serving</th>
<th>Calories</th>
<th>230</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Fat</strong></td>
<td>8g</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Saturated Fat</strong></td>
<td>1g</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Trans Fat</strong></td>
<td>0g</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>0mg</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>160mg</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Total Carbohydrate</strong></td>
<td>37g</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Dietary Fiber</strong></td>
<td>4g</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Total Sugars</strong></td>
<td>12g</td>
<td></td>
</tr>
<tr>
<td>Includes 10g Added Sugars</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>3g</td>
<td></td>
</tr>
<tr>
<td><strong>Vitamin D</strong></td>
<td>2mcg</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Calcium</strong></td>
<td>260mg</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Iron</strong></td>
<td>8mg</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Potassium</strong></td>
<td>235mg</td>
<td>6%</td>
</tr>
</tbody>
</table>

**Vitamins & Minerals listed are the main nutrients of national concern**

**Sodium** = salt. Look for 140 mg or less for a low-sodium food. Pay attention to % on the right for a good estimate of how much sodium you’ll have left for the day if you eat this food.

The % Daily Values are reference amounts for someone eating 2000 calories per day. In this example, 8 grams of fat is 10% of the fat needed by that person for the entire day.

**Calories = amount of energy contained in 1 serving, which is 2/3 cup in this case**

**Total Carbohydrate encompasses grams of carbs from dietary fiber & total sugar (which includes added sugar)**

**Total Sugar encompasses grams of added sugars too. Total sugar - added sugar = grams of natural sugar**

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MAKE EATING A SOCIAL EVENT
Blue Zones

LOMA LINDA CA, USA

NICoya COSTA RICA

SARDINIA ITALY

IKARIA GREECE

OKINAWA JAPAN

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Eating With Others Promotes Longevity

doi: 10.1136/bmjopen-2017-016575

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Following a Balanced Eating Pattern at Any Age

A healthy eating pattern includes:

• Foods that are high in vitamins, minerals, and phytonutrients
• A variety of fruits and vegetables—dark green, red, and orange
• Fiber from legumes, whole grains, and more
• Lean proteins and unsaturated fats
• Sharing meals with others

A healthy eating pattern limits:

• Sugar-added foods
• Highly processed foods

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Eat food
Not too much
Mostly plants

-Michael Pollan
THANK YOU!

Let’s stay connected:

📞 (520) 621-9036
✉️ mbskiba@arizona.edu
🐦 @doctor_skiba
🌐 nursing.arizona.edu/mbskiba