Click on each category below for more information

We emphasize:

Healing foods
Only foods known to have healing benefits or essential nutrients are included.

Plant-based choices
Plant foods create the base and may be accented by animal foods.

Variety and balance
Balance and variety of color, nutrients and portion size celebrate abundance.

Support of a healthful environment
Our food, and we in turn, reflect the health of our earth.

Mindful eating
Truly savor, enjoy and focus on what you are eating.

About Healing Foods Pyramid

The pyramid shape was chosen due to its general familiarity. However, with the complexity of nutrition choices and concepts today, no two-dimensional model can fully convey all considerations. The categories and their placement on the pyramid generally support our intent, which is to emphasize the foundational role of Water, followed by the importance of a rainbow of Fruits and Vegetables. Grains emphasize whole grains and includes some starchy vegetables that act like grains in the body. Legumes are excellent sources of non-animal protein in this plant-based pyramid. Healthy Fats emphasizes monounsaturated oils and nuts. Eggs offer high quality protein and Dairy includes foods low in fat yet rich in calcium. Lean Meats complement other foods rather than playing the starring role. In Fish & Seafood, fish high in omega-3 fatty acids is emphasized. Seasonings include

herbs, onions, garlic, pepper, salt and others that add flavor while contributing healing benefits. Dark Chocolate is a source of antioxidants and Alcohol, when used in moderation, has health benefits. Use of alcohol is to be guided by consideration of one's personal health. Tea is recommended as a healthful beverage choice.

At the top of the pyramid is a Personal Space purposely left open. It is to be filled by you. What will make this Healing Foods Pyramid complete for you?

Facts About documents offer details of the recommendations. With the ever-changing ideas and research findings of food and nutrition, this Healing Foods Pyramid will be a continuous and dynamic work in progress

Healing Foods Pyramid

Accompaniments

Due to their distinct healing benefits and considerations, we offer separate *Facts About* for each of the accompaniments listed.

This *Facts About* reviews alcohol and provides a guide for selecting an appropriate amounts and recommendations for incorporating healthy changes into your diet

This *Facts About* reviews dark chocolate and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size and recommendations for incorporating healthy changes into your diet.

This *Facts about* reviews teas and provides a guide for selecting and incorporating healthy changes into your diet.

Healing Foods Pyramid

This Facts About reviews the benefits and risks of alcohol consumption. It also provides a guide for selecting appropriate amounts.

What are the recommended servings per day?

- Optional: 1-2 servings per day depending on age, gender, and history

Optional - Although there are some documented health benefits to moderate alcohol consumption, we do not encourage people to start drinking. As with other categories listed in this pyramid, there are potential health risks that must be weighed (see health concerns section).

What is moderate drinking?

- One drink or less a day for women and people over 60
- Two drinks or less a day for men (no more than one an hour)

This limit is based on the differences between men and women both in weight and the way they metabolize alcohol.

Is the risk-benefit balance for an individual drinker favorable or unfavorable?

Risk-benefit balance depends on the individual's age, gender, and history. We do not recommend alcohol consumption for:

- Women who are pregnant or planning to become pregnant
- People who plan to drive or engage in other activities that require attention or skill
- People taking medications that interact with alcohol, including some over-the-counter medications
- Individuals with a history of alcoholism or alcohol abuse
- Those under the age of 21

Selected Alcohol Beverage Sources with Serving Sizes

Type of Drink	Serving Size	Typical % Alcohol	Total Amount of Alcohol
Beer	12 oz.	5 %	0.6 oz.
Wine	5 oz.	12 %	0.6 oz.
Hard liquor (whiskey, vodka, rum, gin, scotch)	1.5 oz.	40 %	0.6 oz.
The alcohol content of a beverage is dependent on its alcohol concentration, or % alcohol. The above examples contain approximately the same amount of alcohol.			

What are the potential health benefits of moderate alcohol consumption?

- May lower risk of coronary artery disease and heart attack
- May decrease risk of stroke caused by blocked blood vessels
- Decreases tension, anxiety, and self-consciousness
- In the elderly, stimulates appetite and may promote regular bowel movement
- May be associated with a decreased risk of gall bladder surgery in women

Red Wine

- Moderate consumption may be associated with longevity
- Contains tannins, which may raise HDL (good) cholesterol levels and inhibit platelet cells in the blood from clumping together
- Contains resveratrol, an antioxidant compound found in grapes, which may decrease the development of some cancers
- Resveratrol affects the immune system and inflammation in the body; both immune and inflammatory components are thought to be important in the development of plaque buildup in blood vessels, which often leads to heart disease
- Significant source of saponins, antioxidants believed to promote heart health by binding to cholesterol in the blood and preventing its absorption
- Saponins may play a role in decreasing inflammation, which could have beneficial effects in reducing heart disease and cancer risks

Liquor and Beer

- Raises HDL (good) cholesterol levels
- Inhibits platelet cells in the blood from clumping together

What are the health concerns of alcohol consumption?

- Increases risk of accidents
- Often a trigger for migraine headaches
- Increases strokes caused by bleeding
- Higher risk of fetal alcohol effect (FAE), low birth weight, and stillbirth
- Increases physical, mental, and behavioral problems among the children of mothers who drink during pregnancy
- Medication interactions - including non-prescription drugs
- Increases the risk for cancers of the oral cavity, pharynx, esophagus, and larynx
- Increases the risk for cancers of the stomach, colon, rectum, liver, and ovaries
- Increases accumulation of fat in the liver, alcoholic hepatitis, and cirrhosis. This contributes to liver disease and sometimes liver failure.
- Increases estrogen levels, a risk for breast cancer
- Tobacco use enhances alcohol's effects on the risk for cancers of the upper digestive and respiratory tract
- Liquor consumption (not beer or wine) may be associated with higher homocysteine levels in the blood which is associated with an increased risk of heart disease

Specific Considerations

- Abstinent individuals should not begin to drink solely for health benefits
- Some benefits can be achieved from whole foods instead of alcohol. Resveratrol contained in grape skins is available in whole grapes, grape juice or wine.
- Ask your physician about potential benefit and harm of alcohol consumption in your individual case, considering your age, gender, medical history, and medications

This *Facts About* document is published by Monica Myklebust, MD, and Jenna Wunder, MPH, RD, at University of Michigan Integrative Medicine Clinical Services. Our mission is to care for people using an Integrative Medicine model that reaffirms the importance of relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches to achieve optimal health and healing.

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Healing Foods Pyramid

This Facts About reviews dark chocolate and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per week?

- Up to 7 ounces per week, average 1 ounce per day

What is chocolate?

Chocolate is made using beans harvested from the cocoa tree, *Theobroma cacao*. The beans are removed from their pod, fermented, dried, roasted and then ground to produce a cocoa mass or cocoa liquor. This is then pressed to yield cocoa butter and cocoa cake which is ground up into cocoa powder.

What is dark chocolate?

Dark chocolate is also known as "bittersweet" or "semisweet" chocolate. It contains a high percentage (=70%) of cocoa solids, and little or no added sugar. Dark chocolate has a rich, intense flavor, and is found in candies and some of the chocolate morsels (chips) used in baking.

What qualities should you look for in dark chocolate?

- 70% cocoa or more
- Made from cocoa butter instead of fats such as palm and coconut oils. Although cocoa butter does contain significant amounts of saturated fat, it has been shown to have a neutral (or even a beneficial) effect on cholesterol unlike the saturated fat in both palm and coconut oils.
- Made without the use of 'hydrogenated' or 'partially hydrogenated' oils which are known to negatively impact cholesterol.
- Darker is better: plant chemicals like *flavonoids* contribute to pigment. So, more flavonoids means darker chocolate and potentially greater health benefits.

Why choose dark chocolate?

- Contains *flavonoids* called *procyanidins & epicatechins;* flavonoids are part of a group of antioxidants known as polyphenols and are found in a variety of foods including tea, red wine, and various fruits and vegetables
- Decreases LDL (bad) cholesterol oxidation
- Reduces the risk of blood clots
- Increases blood flow in arteries
- May lower high blood pressure
- Cocoa may have a beneficial effect on cholesterol levels because it consists mainly of stearic acid and oleic acid. Stearic acid is a saturated fat but unlike most saturated fatty acids, it does not raise blood cholesterol levels. Oleic acid, a monounsaturated fat, does not raise cholesterol and may even reduce it.

- May improve mood and pleasure by boosting serotonin and endorphin levels in the brain
- Contains a number of minerals, including calcium, magnesium, and potassium

Nutrition Information for 1 oz (28.35g) Dark Chocolate							
Calories	**Protein**	**Total Fat**	**Calcium**	**Magnesium**	**Phosphorus**	**Potassium**	**Caffeine**
136	1.19g	8.51g	9mg	33mg	37mg	103mg	18mg

Special Considerations: Milk vs. Dark Chocolate:

- Because milk binds to antioxidants in chocolate making them unavailable, milk chocolate is not an antioxidant source and is higher in fat
- To get the benefits of antioxidants, avoid drinking milk with dark chocolate

What are the health concerns of chocolate?

Caffeine

- Contained in chocolate
- An addictive stimulant that may negatively impact health by contributing to headaches, anxiety, insomnia, heart palpitations, high blood pressure, digestive and urinary tract disorders
- Has a diuretic effect, causing the body to lose water
- Increases stomach acid. Avoiding it may be beneficial to people with digestive concerns.
- Even modest amounts of caffeine may increase symptoms of hypoglycemia. Therefore, people with blood sugar concerns may consider avoiding caffeine
- Avoidance of caffeine reduces symptoms of fibrocystic breasts in some women

Kidney Stones

Chocolate contains oxalates which can lead to an increase in urinary oxalate excretion. Increased urinary oxalate increases the risk of kidney stone formation. As a result, those individuals prone to developing kidney stones should reduce their intake of oxalate from food - including chocolate - as a way to reduce urinary oxalate.

Migraine Headaches

Dark chocolate which contains a natural chemical, tyramine, is thought to trigger migraines although the data is inconclusive. Not all individuals who suffer from migraines are sensitive to tyramine. Other foods containing tryamine include fermented and aged cheeses, certain red wines, and citrus and overripe fruits. Rather than eliminating all tyramine foods at once, experiment to see if certain foods are more problematic than others.

Nutrition Tips

1. High-quality chocolate contains a high percentage of cocoa solids. It is brown or dark brown in color, and is glossy. Avoid purchasing chocolate that has a grayish tone, white spots on the surface, or small holes.
2. While a little dark chocolate is food, a lot is not better. Chocolate is loaded with calories so consume sparingly.

3. Freeze small servings of chocolate to decrease temptation and help with portion control.
4. Treat yourself to high quality dark chocolate that has >70% cocoa. It is so rich and delicious that a small portion is usually satisfying.
5. To avoid overindulging in chocolate, eat it when after you have enjoyed a nice lunch or dinner.
6. Have a piece of fruit prior to the chocolate to help satisfy your sweet craving.

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Healing Foods Pyramid

This Facts About reviews teas and provides a guide for selecting and incorporating healthy changes into your diet.

What are the recommended servings per day?

- 2-4 cups per day

Why should you drink tea?

Teas are rich in antioxidants called polyphenols which are plant chemicals that may help prevent cancer, heart disease, and other diseases by:

- Inhibiting growth of cancer cells
- Reducing high blood pressure
- Protecting against stroke
- Improving blood flow to the heart
- Reducing total and LDL (bad) cholesterol
- Inhibiting the formation of blood clots in artery walls
- Steadying blood sugar levels
- Lowering the risk for osteoporosis
- Acting as an anti-inflammatory agent
- Enhancing immune function and helping fight infections
- Protecting against viral infections and liver disease
- Inhibiting the growth of bacteria that can cause gum disease, cavities, and bad breath

Selected Food Sources with Serving Sizes

White and green teas are less processed and contain higher levels of antioxidants than black or oolong teas. Caffeine content varies in teas - more processed often is linked to higher caffeine levels.

Teas- Comparison per 8oz serving	
*Listed from highest level of **antioxidants** to lowest level*	*Listed from highest level of **caffeine** to lowest*
White	Black
Green	Oolong
Oolong	Green
Black	White

Special Considerations

What are antioxidants?

Antioxidants are substances that allow the human body to neutralize unstable molecules, commonly called free radicals. They may also target and repair DNA mutations caused by oxidation. Like other antioxidants, catechins found in green tea and theaflavins found in black tea selectively prevent enzyme activities that lead to cancer or heart disease.

What are the different types of tea?

- All true tea comes from the tea plant, *Camellia sinensis,* and differences between each tea type come from variations in the processing of the tea leaves. *In addition,* there are natural differences within each tea type resulting from as portion of the plant harvested, time of year the leaves and buds are harvested, soil type and climate the tea plants are grown.
- **White tea** is a form of tea in which the young leaves and buds are rolled and dried. It is the least processed form of tea.
- **Green tea** is an unfermented tea which is withered and steamed before drying to prevent oxidation/fermentation and retain the leaves' green color. This method preserves the polyphenol content of green tea.
- **Oolong tea** is a lightly fermented tea, between green and black tea on a continuum

- **Black tea** is the most common form of tea worldwide and has a stronger color and flavor than green tea. It is prepared from tea leaves that have been allowed to ferment/oxidize before being fully dried, and due to the oxidation process the polyphenol content is less than that of unfermented green tea.
- **Herbal teas,** technically called *tisanes*, are not true teas in the strict sense but are popular for their medicinal and calming qualities, unique flavors and are all caffeine-free. They contain a blend of dried plant flowers, stems, roots, or leaves. Due to the diverse nature of herbal teas, they are not reviewed here in detail.

Caffeine

- Tea contains varying amounts
- An addictive stimulant that may negatively impact health by contributing to headaches, anxiety, insomnia, heart palpitations, high blood pressure, digestive and urinary tract disorders
- Has a diuretic effect, causing the body to lose water
- Acidic beverages and caffeine increase stomach acid. Avoiding these substances may be beneficial to people who have digestive concerns
- Even modest amounts of caffeine may increase symptoms of hypoglycemia. For this reason, people with blood sugar concerns may consider avoiding caffeine
- Avoidance of caffeine reduces symptoms of fibrocystic breasts in some women
- Black tea contains an average of 60 mg caffeine per cup, while green tea contains 36 mg per cup
- All teas contains less caffeine than an 8 oz. cup of coffee, which has about 95 mg

Decaffeination Process

The process of decaffeinating tea may involve the use of chemicals and traces of solvents may remain in the tea. To avoid chemical residues from this process, purchase tea that is decaffeinated by more natural means such as water or carbon dioxide.

How do you brew a pot of tea?

For best results, start with a ceramic teapot with a lid. Warm the teapot with hot water and pour it out. Also begin with good-tasting water, such as filtered or spring water. Tap water contains chemicals which will affect the taste of the tea. Brew times and temperatures vary depending on type of tea used and personal preference. We offer recommendations below for brewing black, oolong, green and white teas.

To make **black or oolong tea** add one teaspoon of tea or one tea bag for each 8 oz. cup of water to the warmed teapot. In a separate tea kettle, bring water to a full boil-water at a bubbling boil agitates the tea leaves and causes them to open, for the full extraction of flavor. Pour boiling water over the tea bags or tea leaves in the warmed teapot, and steep for a full three to five minutes. After steeping, remove tea bags or strain tea through a fine mesh tea strainer.

For **green tea** remove water from heat just prior to boiling or allow water to stand for a few minutes after boiling and steep one teaspoon of tea or one tea bag per 8 oz water for only 1-3 minutes in a covered teapot.

White tea is prepared similarly to green tea, though a longer steep time is necessary to allow the leaves enclosing the bud to open up and release their flavor to the cup. Steep 3-10 minutes for the first steep, adding a minute or two to each subsequent steep. White tea will stand up to 3 or more steeps. White tea is extremely light weight so to be sure to add enough leaf to the cup or pot.

Tea Selection

The more space tea leaves have available during brewing, the better they are able to release all of their flavor. For this reason, loose tea is preferred over a small tea ball, infuser or teabag.

To maintain freshness, tea must be stored in a dark, odor-free and moisture-free environment. An airtight container stored at room temperature is fine for most types of tea. Green tea can be stored in an air-tight container in the refrigerator as long as no moisture is in the storage container.

Ideas to Increase Tea Consumption

1. Keep a pitcher of brewed iced tea in the refrigerator.
2. Replace part or all of the coffee or sodapop you consume during the day with tea, either hot or iced.
3. Take tea breaks instead of coffee breaks.
4. Carry teabags in your handbag or car.
5. Add fresh squeezed citrus juice or pureed berries to a pitcher of iced tea.
6. Try an herbal tea blended with green or white tea.

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Healing Foods Pyramid

This Facts About reviews lean meats and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per week?

- Optional* : 1-3 servings per week

*Optional - Those individuals choosing to not include animal foods in their diet need to be aware of important nutrients found in these foods. These nutrients can be obtained from a thoughtful and varied vegetarian diet. However, some individuals who avoid animal products may develop a vitamin B12 or iron deficiency and may also need to consider a calcium supplement. If you have questions regarding this, consult with your physician or registered dietitian regarding your individual needs.

Why choose lean meat?

- High protein source
- Rich iron source
- Contains B-12 vitamins

Selected Food Sources with Serving Sizes

Selected Lean Meat Sources Lean Meat Portion size: 2-3 oz				
Poultry	**Beef**	**Pork**	**Lamb**	**Wild Game**
Chicken	Flank steak	Centerloin	Chops	Venison
Cornish hen	Sirloin tip	Tenderloin	Leg roast	Bison
Turkey	Eye of Round	Canadian bacon	Tenderloin Shank	Elk
White meat, but not dark meat, without skin is considered lean.	Top Round			Ostrich
	Tenderloin			Emu
	Top Loin			Squab
	Rump roast			Wild duck
	Extra lean ground beef			Pheasant
				Rabbit

Special Considerations?

Choosing lean meats

- Choose lean meat containing less than 3g of fat per 1 oz
- Generally, the leanest cuts of meat contain round or loin in their name
- Choose animal products that are labeled “organic,” “hormone-free,” “antibiotic-free,” “free-range,” “grass-fed, “ and / or “wild” whenever possible
- Choose lean meat over higher fat choices to reduce total fat intake
- Consume lean meat weekly rather than daily
- Look for poultry with USDA Select grading of A and B
- Look for beef with USDA Select or Choice grading
- To lower the fat content of poultry and other meat, cut off skin and fat before cooking and/or eating it
- While many grocery stores carry both ground chicken and ground turkey, it may contain as much fat as ground beef because it may include dark meat and skin. For lower fat, choose ground breast meat or look for low fat ground chicken or turkey.

Saturated Fat Content

- Lean meat contains less than 3g of fat per 1 oz , which is less than higher fat choices, but still contains some saturated fat
- The typical American diet is high in saturated fat, coming mostly from animal foods
- Eating too many foods with saturated fat may increase blood levels of LDL and total cholesterol. High blood levels of LDL and total cholesterol are risk factors for heart disease.
- Diets high in saturated fat promote obesity, cancer, heart disease, inflammatory arthritis, diabetes, and chronic pain

Use of Hormones and Antibiotics

- Most commercial animal products contain residues from drugs, hormones, and chemicals used to keep modern dairy cows producing abundantly. These residues in food may increase the risk of breast cancer and other hormone-related cancers including prostate cancer.
- Most commercially-raised animals may have been exposed to antibiotics. This practice contributes to the escalating problem of antibiotic-resistant bacteria throughout the world.

Choose Organic

We recommend organic, free-range animal products because they contain less antibiotic or hormone residue and have a higher omega-3 and vitamin E content. These qualities make organic animal products a better nutritional choice. We believe they generally provide better flavor than conventionally raised animals.

Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. Organic food is produced without using most conventional pesticides, petroleum-based fertilizers, or sewage sludge-based fertilizers, bio-engineering, or ionizing radiation. Organic systems replenish and maintain soil fertility, eliminate the use of toxic and persistent pesticides and fertilizers, and build biologically diverse agriculture.

Free-Range, Grass-fed, Pasture-raised

Some studies have shown that free-range, grass-fed and pasture-raised animals contain more omega-3 fatty acids and vitamin E. Free-range farming generally provides adequate room inside. To be certified by the USDA, producers must demonstrate to the Agency that the animal has been allowed access to the outside. These animals have fresh air, open space, and enjoy shelter. They also have the opportunity to forage for food.

Know Your Limits for Fat

- On a 2,000 calorie diet, about 30% or 600 calories (67g) should come from total fat per day
- A ratio of 1:2:1 of saturated: monounsaturated: polyunsaturated (such as Omega-3s) fat is recommended
- 1:2:1 in calories equals 150:300:150; no more than 150 calories or 7.5% (17g) of total calories from saturated fat

Ideas for your lean meat consumption

1. When ordering lean meat in restaurants make sure that it has been prepared with either dry or moist heat methods; poached, steamed, grilled, baked or broiled are preferred.
2. To reduce saturated fat and calorie intake, avoid meat that has been battered and fried, slathered in butter, or blanketed in creamy sauces.
3. Experiment with leaner cuts of meat in your favorite recipes to replace higher fat choices.
4. Choose lean meat up to 3 times per week rather than daily.
5. Use lean meat to flavor meals rather than as the main focus.
6. Be mindful of portion size for all meats – a 2-3 oz serving of lean meat is approximately the size of a deck of cards
7. To reduce the amount of meat in a recipe, replace half with beans, mushrooms or other vegetables.

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Healing Foods Pyramid

This Facts About lists common fish & seafood with an emphasis on those choices with high omega-3 content. We make recommendations on how to avoid toxins and choose fish & seafood that support sustainable fisheries. We provide a guide for selecting appropriate portion sizes and recommendations for incorporating healthy choices into your diet.

What are the recommended servings of fish & seafood?

- Optional: 2-4 servings per week, including at least 2 servings of fish with high omega-3 content
  - Serving size 4-6 ounces

Why should you choose fish & seafood?

- Low in saturated fat
- Rich source of protein and iron
- Contains B-12 vitamins
- Richest source of omega-3 fatty acids may be helpful in the prevention and treatment of: heart disease, high blood pressure, inflammation, mental health disorders, diabetes, digestive disorders, autoimmune disease, and cancer

Selected Food Sources with Serving Size*

Selected Fish and their Omega-3 Fatty Acid Content (2.0 g and above per serving)

Finfish High in Omega-3s	**Average grams of omega-3 fatty acids per 6 ounce portion**
Anchovy, European, canned in oil	3.4 g
Wild Salmon	3.2 g
Pacific and Jack mackerel	3.2 g
Sable Fish	3.0 g
Whitefish	3.0 g
Pacific sardine	2.8 g

Bluefin tuna	2.8 g
Atlantic herring	2.4 g
Atlantic mackerel	2.0 g
Rainbow trout	2.0 g
***Note:* We recommend eating fish listed in this tableat least twice per week**	

Selected Fish and Seafood with Moderate-Low Omega-3 Fatty Acid Content (less than 2.0 g per serving)

Common Finfish	Grams of Omega-3's **per 6 oz. portion**	Common Seafood	Grams of Omega-3's **per 6 oz. portion**
Tuna, white albacore, canned in water	1.4 g	Mussel	1.4 g
Halibut	0.8 g	Wild Eastern Oyster	1.0 g
Pollock	0.8 g	Farmed Eastern Oyster	0.8 g
Ocean Perch	0.4 g	Blue crab or Alaska King crab	0.8 g
Tuna, light, canned in water	0.4 g	Shrimp	0.6 g
Yellowfin tuna	0.4 g	Scallop	0.6 g
Cod	0.2 g	Clam	0.4 g
.	.	Lobster	0.2 g
.	.	Crayfish	0.2 g
Note: While the fish and seafood above do contain some omega-3s, other fish are richer sources (see High Omega-3 table above)			

*** Omega-3 content of various fish and seafood sources are averages and may depend on factors such as time of year of harvest and body of water in which the animal resides. Values should be used for comparison of relative amounts in fish and seafood sources of omega-3 fatty acids.**

Special Considerations

Choosing Fish & Seafood

- Seafood should not smell "fishy" but rather like a "fresh ocean breeze"
- Mollusks should always be alive when purchased with the shells. Shells should be tightly closed or close tightly when gently tapped.
- Use fresh fish no later than 2 days after purchase
- For long-term storage, fish must be frozen
- Fish is fully cooked when the flakes separate easily; about 10 minutes of cooking time per 1 inch of thickness

What are omega-3 fatty acids?

Omega-3 fatty acids are a type of polyunsaturated fatty acid (PUFA). They are an essential component of the human diet because our bodies can not make them. These fats are necessary for proper brain growth and

development. Omega-3s are most abundant in deep-water fatty fish and some plant foods. They are anti-inflammatory and may be helpful in the prevention and treatment of numerous conditions.

Which fish should you eat to get the greatest benefits of omega-3 fatty acids?

Omega-3 fatty acid content varies greatly among different species of fish. Cold-water fatty fish have the highest content of omega-3 fatty acids because their physiology, environment and diet promote omega-3 fatty acid production in their flesh.
All fish contain some amount of omega-3s, however quantities vary among species and within a species according to the same factors mentioned above, i.e. environment and diet.

What is the daily recommended intake of omega-3 fatty acids?

There are currently no established guidelines regarding optimal omega-3 intake. According to the Institute of Medicine, the Adequate Intake (AI) is 1.1g daily for women and 1.6 g daily for men. Although some experts believe that these recommendations might be too low to obtain the health benefits associated with omega-3s. Research shows benefits associated with higher intake of 2-3 g per day.

Why is the fat ratio important?

Two types of fatty acids that are essential for human health are omega-3 and omega-6. Studies suggest that decreasing the ratio of omega-6 (in vegetable oils) to omega-3 fatty acids (in fatty fish) is important to reduce risk of cancer and heart disease, inflammatory conditions, and depression.

Most people consume too many omega-6 fatty acids and consume too little omega-3 fatty acids. To reduce your risk of chronic disease, reduce your intake of omega-6 fatty acids and increase your intake of omega-3 fatty acids.

- Avoid vegetable oils such as corn or safflower oil.
- Eliminate highly processed foods.
- Eat high omega-3 fish at least twice per week.

Know Your Limits for Fat

- On a 2,000 calorie diet, about 30% or 600 calories (67g) should come from total fat per day
- A ratio of 1:2:1 of saturated: monounsaturated: polyunsaturated (such as Omega-3s) fat is recommended
- 1:2:1 in calories equals 150:300:150; no more than 150 calories or 7.5% (17g) of total calories from saturated fat

Potential Chemical Contaminants

Risk of Mercury Poisoning

Mercury is a toxic heavy metal that can accumulate in fish. Eating fish with high levels of mercury can negatively impact brain development in children and can affect learning and memory function in adults. Certain fish species are known to have higher mercury concentrations than others, sometimes due to polluted waters. The highest levels of mercury and contaminants tend to accumulate in the large predatory fish at the top of the food chain.

Avoid* in pregnancy and in young children

Shark

Swordfish

King mackerel

Tilefish

Limit* intake in children as well as pregnant and nursing women*

Albacore tuna
Bass (Sea and Largemouth)
Bluefish
Grouper
Halibut
Lobster
Marlin
Red snapper
Pike
Orange roughy
Spanish mackerel
Walleye

Low* levels of mercury-containing fish*

Anchovies
Atlantic mackerel
Catfish
Cod
Canned light tuna
Haddock
Herring
Mahi mahi
Pollock
Salmon
Sardine
Shad
Shrimp
Trout
Whitefish

Advice from the EPA for women who are pregnant, planning to become pregnant or nursing:

- *Do not eat shark, swordfish, king mackerel, or tile fish because they contain high levels of mercury. Everyone else can eat up to 6 ounces of high-mercury fish per week.
- ** Eat up to 12 ounces per week (about 3 to 4 servings) of a variety of fish and shellfish that are lower in mercury
- Five of the most commonly eaten fish that are low in mercury are shrimp, canned light tuna, salmon, pollock, and catfish.
- A commonly eaten fish, albacore ("white") tuna contains higher levels of mercury than canned light tuna because these fish are larger. Limit consumption to 6 ounces of albacore tuna per week.

- For further information about the safety of locally caught fish and shellfish, visit the Environmental Protection Agency's Fish Advisory website www.epa.gov/ost/fish or contact your State or Local Health Department. A list of state or local health department contacts is available at www.epa.gov/ost/fish. If no advice is available, eat up to 6 ounces per week of fish you caught from local waters, but don't consume any other fish during that week.
- Follow these same recommendations when feeding fish and shellfish to your young children, but serve smaller portions

Risk of PCB Exposure

PCBs (polychlorinated biphenyls) are industrial pollutants that find their way into fresh waters and oceans where they are absorbed by fish. A recent study reported unacceptable levels of PCBs in fish feed given to farmed salmon. The study reported that PCB levels in farmed salmon, especially those in Europe, were about seven times higher than in wild salmon. PCBs are potential human carcinogens, known to promote cancer in animals. Other potential health effects include impaired memory and learning, and adverse effects on the immune, reproductive and nervous systems. Until more research results are available, it may be prudent to choose wild salmon over farmed salmon and eat a wide variety of fish, along with plant sources of omega-3s. You can reduce PCB exposure from fish by removing the skin and visible fat as well as baking, broiling or grilling fish instead of frying.

Farmed vs. Wild

The old adage “you are what you eat” applies even if you are a fish. The location and living conditions where fish and seafood live can affect what they eat and their exposure to chemicals. In some studies, farm-raised fish have been shown to contain higher levels of contaminants compared to fish caught from the wild. However, there are some ethical fish farms that take good care of their fish and limit contaminant exposure. Recommendations have not yet been established for farmed vs. wild fish and seafood sources although the EPA has limited fish consumption in vulnerable populations such as children and women of childbearing age. Talk to the person you buy your fish and seafood from to better understand this issue.

Incorporating High Omega-3 Fish into Your Diet

1. Order a variety of fish in restaurants and avoid fish that is fried or dipped in batter.
2. Experiment with fish recipes to replace red meat and other high fat choices.
3. Look for wild salmon at your local health food stores.
4. Mix canned sardines with your own combination of chopped red onion, avocado, hard-cooked eggs, lemon juice, salt and/or pepper.
5. Add chopped anchovies to pasta sauce just after you sauté your onions and garlic; the fish will melt away while leaving a mild, subtle fishy taste to your sauce.
6. When buying canned products, look for fish packed in water or olive oil (preferably, extra-virgin).
7. Cook with either dry or moist heat methods; poached, steamed, grilled, baked, or broiled are preferred.
8. Avoid fish that is battered and fried, slathered in butter, or blanketed in creamy sauces to reduce saturated fat and calorie intake.

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Healing Foods Pyramid

This Facts About reviews eggs and gives examples of the type of eggs to choose. We provide a guide for recommended servings per week as well as information for incorporating healthy changes into your diet.

What are the recommended servings per day?

- Optional: Average 1 per day

To date there is no established daily serving recommendation for eggs. They have been controversial in the past due to the high cholesterol content of the yolk. Recent findings suggest that dietary cholesterol has less impact

on blood levels of cholesterol than intake of saturated fat or hydrogenated fat. As you will notice while reading this document, eggs are packed with nutrients and can be considered a healthy choice if eaten appropriately.

However, some people may be super-sensitive to dietary cholesterol and need to restrict consumption. Therefore, consistent with the National Cholesterol Education Program (NCEP), our recommendation for individuals with high cholesterol is to limit yolk consumption to 2 per week.

Why choose eggs?

- Protein, Vitamin, and Mineral Content
  - Egg white protein quality is used as the gold standard for comparison with other proteins
  - Whole eggs offer almost every essential vitamin and mineral needed by humans, with the exception of vitamin C
  - Egg yolks contain an array of essential vitamins, such as vitamins A, D, E, and K which are not found in egg whites
- Source of Carotenoids: Lutein and Zeaxanthin
  - One egg yolk, on average, contains significant amounts of the two carotenoids, lutein and zeaxanthin
  - Research shows that individuals who consume a greater number of foods rich in lutein and zeaxanthin have a lower risk for age related macular degeneration and heart disease

Nutrient Content of an Omega-3 Enriched Large Egg

Nutrient	Whole Egg	Egg White	Egg Yolk
Calories (kcal)	71	17	55
Protein (g)	6.30	3.60	2.70
Carbohydrate (g)	0.85	0.24	0.61
Saturated Fat (g)	1.6	0	1.6
*Omega-3 Fatty Acids (mg)	100-200	0	100-200
Cholesterol (mg)	210	0	210
Folate (mcg)	26	1.0	25
Vitamin B12 (mcg)	0.36	0.03	0.33
Vitamin A (IU)	245	0	245
Vitamin D (IU)	18.26	0	18.26
Vitamin E (mg)	0.44	0	0.44
Vitamin K (mcg)	0.1	0	0.1
Choline (mg)	215.1	0.42	214.6
Calcium (mg)	24	2.0	22
Iron (mg)	0.49	0.03	0.46
Lutein + Zeaxanthin (mcg)	186	0	186
*Omega-3 content varies due to name brand of egg.			

Source: USDA National Nutrient Database for Standard Reference, Release 17 and Egg Nutrition Center web site.

Specific Considerations

Source of Omega-3 Fatty Acids

- Omega-3 enhanced eggs come from chickens that are fed a diet of natural grains fortified with sources of omega 3 fatty acids, such as algae or flax seed
- These fats are an essential component of the human diet and are needed for brain growth and development
- They may be helpful in the prevention and treatment of heart disease, high blood pressure, inflammation, mental health disorders, diabetes, digestive disorders and autoimmune diseases

Cholesterol

- Eggs contain cholesterol, a waxy substance found only in animal products
- Dietary cholesterol, like that in egg yolks, had been implicated in increasing blood cholesterol levels
- Recent findings suggest that dietary cholesterol has less impact on blood levels of cholesterol than intake of saturated fat
- Be aware that eggs are often found in combination with milk, cream, butter and cheese, which are high in saturated fat, making the combination a “recipe” for heart disease
- ‘Hidden’ eggs can also be found in healthier food choices like pastas and whole grain muffins and baked goods. Be aware of what you are eating. ‘Hidden’ eggs count too.

Know Your Limits for Fat

- On a 2,000 calorie diet, less than 30% or 600 calories (67g) should come from total fat per day
- A ratio of 1:2:1 of saturated: monounsaturated: polyunsaturated (such as Omega-3 fatty acids) fat is considered best
- 1:2:1 in calories equals 150:300:150; no more than 150 calories or 7.5% (17g) of total calories from saturated fat
- A whole large egg contains about 1.6 g (14.4 cal) of saturated, 1.9 g (17.1 cal) of monounsaturated, and 0.7 g (6.3 cal) polyunsaturated fat
- An omega-3 enriched egg increased the amount of polyunsaturated fatty acids by 100-200 mg of the fatty acid
- We recommend at least 1 g of omega-3 fatty acids per day

Egg Allergy

Although most outgrow it, a common cause of food allergy in infants and young children is the egg. Food allergies are abnormal responses of the body’s immune system to certain foods or ingredients. They can show up as rashes, swelling of the skin, nasal congestion, nausea and diarrhea or the most serious reaction – anaphylactic shock, which is life threatening. People with food allergies usually need to eliminate the problem foods from their diet.

Choosing Eggs

- Buy high content omega-3 eggs from vegetarian fed chickens

- Look for USDA Grade AA or A
- Check expiration date on carton
- Choose eggs from "free-range," "cage-free" or "organic" chickens

Antibiotic Residue

Commercially bred chickens that stay confined in cages and eat standard feed may produce eggs containing antibiotics. This practice may contribute to the escalating problem of antibiotic-resistant bacteria throughout the world. To minimize consumption of antibiotic residues and other toxins found in conventionally raised birds, buy organic eggs or eggs of free-range chickens.

Use of Hormones and Antibiotics

- Most commercial animal products contain residues from drugs, hormones, and chemicals used to keep modern dairy cows producing abundantly.These residues in food may increase the risk of breast cancer and other hormone-related cancers including prostate cancer.
- Most commercially-raised animals may have been exposed to antibiotics. This practice contributes to the escalating problem of antibiotic-resistant bacteria throughout the world.

Choose Organic

We recommend organic, free-range animal products because they contain less antibiotic or hormone residue and have a higher omega-3 and vitamin E content. These qualities make organic animal products a better nutritional choice. We believe they generally provide better flavor than conventionally raised animals.

Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. Organic food is produced without using most conventional pesticides, petroleum-based fertilizers, or sewage sludge-based fertilizers, bio-engineering, or ionizing radiation. Organic systems replenish and maintain soil fertility, eliminate the use of toxic and persistent pesticides and fertilizers, and build biologically diverse agriculture.

Free-Range, Cage-free

Free-range, cage-free chickens may have a greater variety of diet, producing eggs that contain more omega-3 fatty acids and vitamin E. Free-range farming generally provides adequate room inside. To be certified by the USDA, producers must demonstrate to the Agency that the animal has been allowed access to the outside. These animals have fresh air, open space, and enjoy shelter. They also have the opportunity to forage for food. Due to the diet and movement ability of free-range, cage-free chickens, their eggs may have better flavor and nutrition than conventional eggs.

Ideas for your eggs consumption

1. When cooking eggs, use canola or olive oil rather than using high saturated fats, such butter or margarine.
2. Hard cooked eggs are a great portable snack. Bring a few to work or to school.
3. Have an egg sandwich for lunch or dinner instead of higher fat meat choices.
4. Add hard cooked eggs to a salad to increase protein content.
5. Add a scrambled egg to veggie-fried rice.
6. Try an omelet with vegetables for a light, quick dinner.
7. Keep hard-cooked eggs in the refrigerator for no more than one week.

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Healing Foods Pyramid

This Facts About reviews low-fat/non-fat dairy and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per day?

- Optional: 1-3 servings per day

Why choose low-fat/non-fat dairy products?

- Though many foods contain calcium, dairy foods are some of the richest sources of calcium
- They are high in protein, vitamin B12 and other minerals the body needs, such as selenium, zinc, phosphorus, potassium and magnesium
- Most milk is fortified with vitamin D, which helps the small intestine absorb calcium
- Low-fat and fat-free milk are also typically fortified with vitamin A, which is lost in the removal of milk fat
- Selecting low-fat/non-fat dairy products helps reduce total and saturated fat intake and calories
- While low-fat and non-fat dairy products are made using 1%, ½%, or non-fat milk instead of using whole milk or cream, artificial ingredients may be added to enhance color, shelf-life, and texture. Read labels and avoid products if the ingredients are chemicals or names too long to pronounce.
- Although recent research suggests that dairy product intake may be associated with lower body weight or body fat, definitive evidence is pending.

Why choose fermented/probiotic milk products such as yogurt?

Probiotic foods contain healthy living bacteria. Eating such foods can help re-establish a healthy bacteria balance in the digestive tract that may have been disrupted by poor diet or medications. Research has shown that the healthful bacteria in yogurt may provide many benefits, such as:

- Offering a safe and effective means of treating acute infectious diarrhea in children
- Preventing antibiotic-associated diarrhea
- Protecting against tumor formation in the colon
- Reducing intestinal transit time which helps prevent constipation
- Improving the digestion of lactose in persons with lactose intolerance
- Enhancing gut and systemic immune function by increasing IgA antibody production
- Preventing allergic reactions by reducing hypersensitivity reactions
- Helps reduce symptoms of inflammatory bowel disease (IBD) such as Crohn's and ulcerative colitis
- Increasing HDL (good) cholesterol and decreasing the ratio of LDL (bad) to HDL cholesterol with long-term, daily intake of yogurt; this may be due to the fatty acid distribution and the type of fats in the milk

Other fermented milk products, such as low-fat/non-fat sour cream, cottage cheese, and cheeses (Swiss and Cheddar), may have similar benefits.

Selected Food Sources with Serving Sizes

Selected Low-fat Dairy Sources
1-3 servings per day **Select from the following with less than 3g fat per serving**
Low-fat/non-fat yogurt (1 cup)
Low-fat/non-fat frozen yogurt (1 cup)
Low-fat/non-fat cottage cheese (1/2 cup)

Low-fat/non-fat cream cheese (1 tbsp)
Low-fat/non-fat sour cream (2 tbsp)
Part-skim ricotta cheese (1 oz or 1/8 cup)
Part-skim mozzarella (1 oz)
Skim milk (non-fat), 1/2%, or 1% (1 cup)

Specific Considerations

Choosing low-fat/non-fat dairy products

- Low-fat dairy products have less than 3 g of total fat per serving
- Check expiration date on containers
- Choose dairy products from "free-range", "grass-fed" or "organic" animals to minimize consumption of antibiotic residues and other toxins

Full-fat cheese

Although full-fat cheese is high in total fat and saturated fat, small amounts of natural, minimally processed cheese can be an important dietary component. The Mediterranean diet, known for its health benefits, includes small amounts of cheese almost daily. Full-fat cheese should be consumed in small portions.

Buy high-quality cheese made by local farmers or imported from reputable creameries. This decreases the chance of antibiotic and hormone residues and use of trans-fats/hydrogenated oils as a means of processing cheese to increase shelf-life. Avoid pre-packaged cheeses for the same reasons.

Examples of Full-fat Cheeses

Up to 1 serving per day Serving size 1-2 oz	
Soft	Brie, Mascarpone
Semi-hard	Blue, Feta
Hard	Cheddar, Swiss
Very hard	Parmesan, Romano

Lactose Intolerance

Many people are lactose intolerant, meaning that they lack the enzyme lactase that breaks down the natural sugar (lactose) found in dairy products. Around the world, various ethnic groups have different proportions of those who are lactose intolerant; approximately 90% of Asians, 70% of African and Native Americans and 50% of Hispanics are lactose intolerant, versus only about 15% of people of Northern European descent.

Lactose intolerance can cause bloating, gas, and stomach aches after intake of dairy products. Symptoms may be avoided by choosing fermented dairy products such as yogurt or lactose free milk.

Casein Sensitivity

The milk protein casein, found in dairy products, stimulates the production of mucus in some people and can potentially aggravate conditions like auto-immune disease, asthma, bronchitis or sinusitis. Some studies suggest that casein may irritate the immune system which should be considered by people who have "overactive immune systems" – often manifested by chronic allergies, lupus and rheumatoid arthritis, for example.

Choose Organic

We recommend organic, free-range animal products because they contain less antibiotic or hormone residue and have a higher omega-3 and vitamin E content. These qualities make organic animal products a better nutritional choice. We believe they generally provide better flavor than conventionally raised animals.

Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. With the increase in incidence of hormone-related diseases such as breast and prostate cancer, it may be prudent to consume only organic dairy products.

Hormones and Antibiotics

- Most commercial animal products contain residues from drugs, hormones, and chemicals used to keep modern dairy cows producing abundantly. These residues in food may increase the risk of breast cancer and other hormone-related cancers including prostate cancer.
- Most commercially-raised animals may have been exposed to antibiotics. This practice contributes to the escalating problem of antibiotic-resistant bacteria throughout the world.

Know Your Limits for Fat

- On a 2,000 calorie diet, about 30% or 600 calories (67g) should come from total fat per day
- A ratio of 1:2:1 of saturated: monounsaturated: polyunsaturated (such as Omega-3s) fat should be the goal. 1:2:1 in calories equals 150:300:150 - no more than 150 calories or 7.5% (17g) of total calories should come from saturated fat
- A low-fat dairy product has less than 3g of fat per serving

Ideas for your dairy consumption

- Freeze yogurt for a frozen dessert. Research shows that probiotic bacteria can survive the freezing process, so freezing yogurt will not diminish its health benefits.
- Plain yogurt, mixed with fresh fruit, makes a quick and easy snack. Since plain yogurt has no added sugars choosing it reduces your sugar and calorie intake. Additionally you get added fiber and antioxidants from the fresh fruit!
- Use cottage cheese like a dip for raw vegetables and whole grain pretzels or pita chips.
- Full-fat cheese has big flavor (and lots of fat). An ounce or two can be a satisfying treat.

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Foods Pyramid

This Facts About reviews spices and herbs and gives examples. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per day?

- Use a variety of spices, herbs, and alliums in your daily food preparation. Experiment cautiously with hot peppers.

What are spices, herbs, alliums and hot peppers?

- **Herbs** refer to leaves of low-growing shrubs. They can be used fresh or dried.
- **Spices** may be the seeds, buds, berries, bark, root, or fruit of tropical plants and trees
- **Alliums** are bulbous plants that are used as flavoring for foods and for their medicinal properties. They are found in most regions of the world except the tropics, New Zealand and Australia.
- **Hot peppers** are edible, pungent fruits of the species Capsicum. They are used as spices and flavoring for foods and for their medicinal properties.

Why choose a variety of seasonings?

- Seasonings are grown for their culinary and medicinal properties
- They may be helpful in many medical conditions, such as:
    - Nausea
    - Infections
    - Anti-inflammatory conditions
    - Autoimmune disorders
    - High blood pressure
    - Cholesterol levels

Selected Food Sources

The following information is not meant to be an exhaustive list. Due to limited space, we have highlighted only a few of the many beneficial seasonings.

Selected Seasonings	
Spices	curry, turmeric, cumin, chili pepper, fennel, cinnamon, ginger, cloves, nutmeg, allspice, mustard seed, black pepper, paprika, salt, cardamom, vanilla, horseradish, anise
Herbs	parsley, chives, thyme, sage, oregano, mint, rosemary, tarragon, basil, dill, cilantro, coriander, marjoram, caraway, savory
Alliums	green onions, onions, shallots, leeks, chives, garlic
Hot Peppers	cayenne, jalapeno, Anaheim , chipotle, habanero, Serrano, ancho

Special Considerations

Whole Turmeric in Powdered Form

- Tumeric is the yellow spice most familiar in Indian cooking and American prepared mustard
- Has antioxidant and anti-inflammatory properties
- May decrease symptoms of autoimmune disorders, arthritis, tendonitis, and other disorders with inflammation
- Curcumin is the part of turmeric that gives the yellow color

Fresh Ginger Root

- Ginger is an underground stem or rhizome which sprouts large pink and orange flowers that look as if they have been carved out of wax
- Has anti-inflammatory properties
- Helps with nausea and motion sickness
- Decreases symptoms of arthritis and bursitis
- Reduces platelet aggregation

Fresh Garlic Cloves

- Garlic cloves are the segments of a head or bulb of garlic
- Natural antibiotic and antiviral agent as a result of sulfur-containing compounds
- May help with infections: colds, sore throat, ear infections in children, fungal or yeast infections

- May slow development of atherosclerosis, improve high blood pressure and decrease total and LDL (bad) cholesterol by reducing blood platelet stickiness and artery spasms
- May decrease risk of developing colorectal, prostate, breast, liver, skin, and digestive tract cancers by inhibiting the growth of tumors and stimulating the immune system

Fresh or Dried Peppermint

- Fresh or dried peppermint are the leaves from the peppermint plant
- Used as a digestive remedy for relief of heartburn, indigestion, and nausea
- May soothe the lower GI tract by decreasing spasms and gas formation
- Contains antioxidants called flavonoids which stimulate bile and saliva production
- Its soothing effect results from the stimulation of salivation, which increases the swallowing reflex and suppresses cough

Cayenne Pepper

- A very pungent spice produced by drying and grinding the orange to deep-red fruits of small-fruited species of *Capsicum*
- Capsicum is used to stimulate digestion
- Eases toothache pain
- Improves peripheral circulation
- Reduces blood clotting tendencies
- Decreases cholesterol
- Helps to prevent arteriosclerosis and heart disease

*Whole food vs. supplement*s

- Whole foods are the best sources of vitamins, minerals, and other plant compounds that help you stay healthy and fight disease
- We recommend these foods in their natural form. Taking them in supplement form may reduce their effectiveness and may increase the risk of side effects.

Interactions with medications and medical conditions

Because of their medicinal qualities, some spices and herbs may interact with medications. We advise individuals to contact their physician if taking medications.

How to use seasonings

1. Spices and herbs should be stored in a cool, dry place.
2. Green herbs should be protected against direct sunlight exposure.
3. Ground spices release flavor immediately, therefore add them at the end of the cooking period.
4. Whole spices should be added at the beginning of cooking so their full flavor can be extracted.
5. Crumbling whole herbs just before use helps to release their flavor.
6. Chopping or mashing garlic releases an active medicinal component, allicin.
7. To reduce the heat of hot peppers, remove the seeds.
8. Fresh herbs can be added to salads, soups and sauces.

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Healing Foods Pyramid

This Facts About reviews healthy fats and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per day?

- 3-9 servings per day (see serving sizes below)

What are the different types of healthy fats and oils?

- Fats and oils are made up of basic units called fatty acids. Each type of fat or oil is a mixture of different fatty acids.

- **Monounsaturated Fatty Acids (MUFA)** are found mainly in vegetable oils, nuts, seeds and some plant foods. They are liquid at room temperature.
- **Polyunsaturated Fatty Acids (PUFA)** are found mainly in vegetable oils, fish and seafood. They are liquid or soft at room temperature. Omega-3 and omega-6 fatty acids are types of PUFA and are considered essential fatty acids because our bodies cannot make them, thus they must be obtained through the diet.
- **Saturated Fatty Acids** are usually solid at room temperature and are found mainly in foods from animal sources like meat, dairy products and butter. Some vegetable oils such as coconut, palm kernel and palm oil are saturated.
- **Trans Fatty Acids** are liquid vegetable oils that have been chemically processed to become solid at room temperature through the addition of hydrogen atoms. These hydrogenated and partially hydrogenated oils are used in some margarines and fried foods as well as to improve the flavor, texture and shelf-life of processed snack foods like cookies and crackers.

Which fats are recommended?

- Emphasize consumption of monounsaturated and omega-3 fatty acids
- Limit consumption of saturated and trans fats (listed as hydrogenated or partially hydrogenated vegetable oils on labels)
- All foods containing fat have a mixture of polyunsaturated, monounsaturated, and saturated fatty acids. It is not feasible or desirable to completely eliminate one type of fatty acid from your diet.

Why choose healthy fats like MUFA and omega-3s?

- They provide antioxidants such as vitamin E and selenium
- Small amounts of healthy fats help the body absorb the vital nutrients from fruits and vegetables
- Including healthy fatty acids in the diet in appropriate quantities can help prevent and treat: diabetes, heart disease, cancer, obesity, musculo-skeletal pain, inflammatory conditions
- Some research suggests that diets including MUFA can have a positive effect on cholesterol, blood pressure, blood clotting and inflammation.
- Omega-3 fatty acids are necessary for proper brain growth and development. They are anti-inflammatory and may be helpful in the prevention and treatment of heart disease, high blood pressure, inflammation, mental health disorders, diabetes, digestive disorders, autoimmune disease and cancer.

Why should I avoid saturated and trans fatty acids?

- Saturated fat eaten in excessive amounts is the main culprit in raising total and LDL “bad” cholesterol, which can increase risk of heart disease.
- Trans fatty acids may act like saturated fats in the body and raise LDL cholesterol levels. They may also lower HDL (“good”) cholesterol.
- A food item may contain less than 0.5 grams of trans fat per serving but still reflect “0” grams of trans fat on its food label. To ensure that the foods you eat are actually free of trans fat, check that hydrogenated and partially hydrogenated vegetable oils are not listed as ingredients.

Selected food sources of MUFA with serving sizes (listed highest to lowest MUFA content)

Oils	**Nuts (serving**	**Seeds**	**Butters (serving**	**Other**

(serving size is 1 teaspoon)	size)	(serving size)	size)	(serving size)
Olive oil Canola oil Peanut oil Sesame oil Walnut oil Soybean oil Flaxseed oil (should be consumed raw and not used in cooking) Grape seed oil	Macadamias (2-3) Hazelnuts (5) Pecans (5 halves) Almonds (7) Cashews (6) Pistachios (17) Brazil nuts (2) Peanuts (9) Pine nuts (50) Walnuts (4 halves)	Sesame seeds (1 Tbsp) Pumpkin seeds (47 seeds) Ground flaxseed (1 Tbsp) Sunflower seeds (3 Tbsp)	Almond butter (½ Tbsp) Cashew butter (½ Tbsp) Peanut butter (½ Tbsp) Tahini/sesame paste (2 tsp) Sunflower seed butter (2 tsp)	Avocado (2 Tbsp or 1 oz) Black olives(8) Green olives (10)

Selected Plant Sources of Omega-3 Fatty Acids (listed highest to lowest omega-3 content)

*Please visit the **Fish & Seafood**sections for more information about animal sources of omega-3 fatty acids.*

Oils (serving size = 1 teaspoon)	Nuts and seeds (serving size)
Flaxseed oil*	Flaxseeds (1 Tbsp)
Walnut oil	Walnuts (4 halves)
Canola oil	Pecans (5 halves)
Soybean oil	Pine nuts (50)
*Should be consumed raw and not used in cooking.	

Specific Considerations

Calorie-controlled high-MUFA diets:

- Do not promote weight gain
- Are more suitable than low-fat diets for weight loss in obese people
- Are a substitute for low-fat diets for medical nutrition therapy in diabetes

Flaxseed Facts

Flaxseeds are an oilseed just like canola and sunflower are oilseeds. The seeds that come from flax provide excellent health benefits:

- Rich source of omega-3 fatty acids, which are similar to the healthy fats found in fatty fish such as salmon
- Good source of fiber
- Contain other beneficial plant nutrients called lignans; research shows that a diet that contains lignans may reduce the risk of several types of cancer as well as heart disease and osteoporosis
- Using ground flax meal or grinding flaxseeds in a coffee grinder is necessary to make MUFA available to our bodies.

What is the daily recommended intake of omega-3 fatty acids?

There are currently no established guidelines regarding optimal omega-3 intake. According to the Institute of Medicine, the Adequate Intake (AI) is 1.1g daily for women and 1.6 g daily for men. However, some experts believe that these recommendations might be too low to obtain the health benefits associated with omega-3s. Research shows benefits associated with higher intake of 2-3 g per day.

Why is the fat ratio important?

Two types of fatty acids that are essential for human health are omega-3 and omega-6. Studies suggest that decreasing the ratio of omega-6 (in vegetable oils) to omega-3 fatty acids (in fatty fish and some vegetable oils) is important to reduce risk of cancer and heart disease, inflammatory conditions, and depression.

Most people consume too many omega-6 fatty acids and consume too little omega-3 fatty acids. To reduce your risk of chronic disease, reduce your intake of omega-6 fatty acids and increase your intake of omega-3 fatty acids.

- Avoid vegetable oils such as corn or safflower oil.
- Eliminate highly processed foods.
- Eat high omega-3 fish at least twice per week.

Know Your Limits for Fat

- On a 2,000 calorie diet, about 30% or 600 calories (67g) should come from total fat per day
- A ratio of 1:2:1 of saturated to monounsaturated to polyunsaturated (such as omega-3s) fat is recommended
- 1:2:1 in calories equals 150:300:150; no more than 150 calories or 7.5% (17g) of total calories from saturated fat
- Most people consume too much saturated fat and not enough monounsaturated or omega-3 fatty acids.

Ideas to balance your fat consumption

1. Choose salad dressings that use olive, canola, or flaxseed oils as its base.
2. Add avocados, nuts, or olives to salads instead of high saturated fat animal foods like cheese, butter and meat.
3. For a snack, opt for a small handful of nuts/seeds each day in place of highly processed and high fat choices including chips, pastries, and cookies.
4. Use olive and canola oils for most cooking.

5. To increase plant sources of omega-3s, choose walnuts, ground flaxseed and uncooked flaxseed oil.
6. Never use oils, seeds or nuts after they begin to smell or taste rank or bitter. This is a sign that the oil has begun to turn rancid through a harmful oxidation process.
7. For high temperature sautéing or frying, use oils with a high smoke point, like canola or grape seed oils.
8. Limit/avoid consuming:
    - Polyunsaturated vegetable oils like safflower, sunflower and corn oil
    - Margarine, vegetable shortening, and all products made with partially hydrogenated oils
    - Saturated vegetable oils such as coconut, palm kernel and palm oil
9. Use high-quality cold-pressed olive oil, flaxseed oil or sesame oil as an addition to cooked foods or salads before eating.
10. Add a tablespoon or two of ground flax seeds or flax meal to smoothies, muffins, bread or any other home-made baked item.
11. Choose white meat; in general, red meat (fatty beef, lamb, pork, ham, duck, and goose) has more saturated fat than white meat (turkey or chicken without skin) or fish
12. Be aware of any foods deep fried in restaurants. Deep fried foods may say “fried in vegetable oil”, but it is often hydrogenated vegetable oil.

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Healing Foods Pyramid

Due to legume's varied characteristics we offer two *Facts About*.

This *Facts About* reviews beans and lentils and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

This *Facts About* reviews soy and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

- **Printed Material**
  - Printable image of Healing Foods Pyramid [PDF]
  - Order a copy of the Pyramid!
- **Comments? Questions?**
  - Email us your comments or questions about the Pyramid

Healing Foods Pyramid

This Facts About reviews beans and lentils and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per day?

- 1-3 servings per day

Why choose legumes?

- Low in fat
- Excellent source of protein
- Good source of fiber
- Contain iron, zinc, calcium, selenium, and folate
- Rich in antioxidants
- Provide a low glycemic index (GI) / glycemic load (GL)
- May help reduce the risk of chronic diseases, such as, heart disease, diabetes mellitus,obesity and cancer

What are legumes?

Beans, peas, lentils, and peanuts are collectively known as legumes, which are plants that have pods with tidy rows of seeds inside. Various foods in this category metabolize differently and provide different nutrients. For example, peanuts, which are usually consumed in ways similar to tree nuts are actually in thelegume family and grow underground. They contain more fat and fewer carbohydrates than other legumes. Sugar snap peas contain fewer calories, carbohydrates, and protein per serving than other legumes and are used in cooking as a vegetable. Soy beans are unique for their high isoflavone and essential amino content. They are also used to make such a wide variety of foods unlike other beans in this category. For these reasons, we have listed peanuts in Healthy Fats, fresh green peas in Vegetables, and soy beans in Soy. Please read these individual Facts About sheets for more information.

Legumes have many of the nutrients recognized as important in preventing heart disease, cancer, obesity, and other chronic diseases. They are a vegetarian source of protein for the diet. For non vegetarians, they offer an alternative source of protein with less fat and more fiber.

Selected Food Sources with Serving Sizes, Protein, and Fiber Content

Selected Food Sources of Legumes		
Types	Serving Size	Protein and Fiber Content
Beans: garbanzo beans (chickpeas), lima beans, fava beans, black beans, black-eyed peas, kidney beans, navy beans, great northern beans, pinto beans, adzuki beans, mung beans	1/2 cup canned or cooked 1/3 cup mashed	Provides approximately 8 grams of protein & 8 grams of fiber
Peas: split, yellow or green		
Lentils: large or small; brown, green, red or black		

Specific Considerations

Protein Complementation

Protein is made up of building blocks called amino acids and must be consumed in the diet for building new proteins in the body. Our bodies can make some amino acids from the protein we eat, but not others; the ones the body cannot make are considered essential amino acids because they must be consumed from the diet.

- Dairy and meat usually contain all of the essential amino acids and are considered to provide complete proteins. However, they often contain saturated fat and cholesterol.
- Grains, fruits and vegetables lack at least one of the essential amino acids and are considered to provide incomplete proteins. These items, when eaten in combination can fulfill requirements for essential amino acids in the diet.
- For the most benefit from complimentary protein foods, plant sources of protein such as legumes, seeds and whole grains should be eaten in combination and during the same day, but do not necessarily need to be eaten during the same meal as once thought.
- There are many examples of common plant-based dishes that contain adequate essential amino acids: brown rice and beans, peanut butter and whole wheat bread, cornbread and pinto beans and refried beans with wheat or corn tortillas.
- Dairy products can also be added to a meatless dish to enhance the protein content of a meal.

Canned versus Dried Beans

- Canned beans are fast and easy to use
- Many canned beans are high in sodium. To avoid this, buy “no added salt” products or rinse thoroughly.
- Dried beans have a fresher taste than canned beans and soaking times vary. Read product label for instruction.

Intestinal Gas

Many people who eat beans have a problem with intestinal gas. Humans are missing an enzyme required to break down raffinose sugars found in beans. The bacteria in our gut feast on these sugars, giving off hydrogen and carbon dioxide and causing intestinal gas. Some people avoid beans due to the intestinal gas or bloating they may produce. Gradually increasing the amount of beans you eat over several weeks can help in overcoming this.

Ideas to increase beans, peas & lentils

1. Choose beans as your protein choice instead of high fat meat or dairy products.
2. Keep pantry stocked with a variety of canned legumes for a quick meal or side dish.
3. If you're new to beans, start with a small amount and increase gradually.
4. Consider vegetarian days.
5. Change your favorite recipe by replacing half the meat with legumes.
6. Try a new legume each week.
7. Enjoy bean soups and a salad for lunch and / or dinner.

To decrease intestinal gas from beans, peas, & lentils

1. Mix 1/8 teaspoon of baking soda into the soaking water. It helps leach out raffinose sugars, reducing intestinal gas.
2. Drain and rinse canned beans. That will get rid of some of the gas-causing raffinose sugars (and almost half of the unwanted sodium).
3. Never cook beans in the water they've soaked in. It's loaded with the gas-causing raffinose sugars.

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Healing Foods Pyramid

This Facts About reviews soy and gives examples of foods to choose from as well as foods to avoid. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per day?

- 1-2 servings per day

Why choose whole soy foods?

- Low in fat
- Excellent source of fiber
- Good source of enriched calcium
- Excellent source of high quality digestible protein (contains all the amino acids essential to human nutrition)
- Tempeh and tofu are moderately rich in important minerals such as zinc, magnesium, iron and selenium

- Some products, such as miso and soy yogurt, are probiotic (contain bacteria which contribute to the health of the intestinal tract)
- Contains isoflavones, which are converted by bacteria in the intestines into phytoestrogens and are beneficial in reducing risk of various cancers, heart disease and osteoporosis

Selected Food Sources with Serving Sizes

Edamamé (Green Soybeans)

These are large soybeans harvested when the beans are still green and sweet tasting. They are high in protein and fiber and contain no cholesterol.

Miso

A smooth paste, made from soybeans and/or grains such as rice or barley, plus salt and a mold culture, aged in cedar vats for one to three years. Miso is a good source of protein, calcium, and zinc.

Soymilk, Soy Beverages

Soybeans, soaked, ground fine and strained, produce a fluid called soybean milk, which is a good substitute for cow's milk. Soymilk is an excellent source of high quality protein and B-vitamins.

Soynuts

Whole soybeans that have been soaked in water and then baked until browned. Roasted soy nuts are highin protein and isoflavones and are similar in texture and flavor to peanuts.

Soy Yogurt

Made from soymilk, its creamy texture makes it an easy substitute for sour cream, cream cheese or dairy yogurt. Soy yogurt is high in protein and calcium.

Tempeh

Whole soybeans, sometimes mixed with another grain such as rice or millet, are fermented into a rich cake of soybeans with a smoky or nutty flavor. Tempeh is a good source of protein and calcium.

Tofu & Tofu Products

Known as soybean curd, tofu is a soft cheese-like food made by curdling fresh hot soymilk with a coagulant. It is a neutral-flavored product that easily absorbs the flavors of other ingredients with which it is cooked. Tofu is rich in high-quality protein and B-vitamins and is low in sodium.

Selected Food Sources of Whole Soy

1-2 servings per day *All the soy foods in the following list are excellent sources of isoflavones, providing a range of 30 - 60 milligrams per serving.*
Edamamé (1/2 cup, cooked)

Miso soup (1/2 cup)
Soybeans (1/2 cup cooked)
Soymilk (1 cup)
Soynuts (1 ounce)
Soy yogurt (1 cup)
Tempeh (1/2 cup)
Tofu (1/2 cup)

Specific Considerations

Breast Cancer

- Soy isoflavones are phytoestrogens that can act in the body in similar ways as estrogens
- High levels of soy isoflavones may raise the risk of breast cancer in post-menopausal women. We do not recommend isolated soy in the form of soy supplements or powders; instead we recommend eating whole soy foods such as soybeans.
- Tofu, tempeh, edamame, miso, and other whole soy foods contain isoflavones in combination with protein, fiber, and some fat
- Phytoestrogens in soy may protect estrogen receptors from excessive stimulation by the body's own hormones and foreign estrogen-like substances
- Benefits of whole soy foods seem to outweigh the risks for most people
- Because of the controversy over soy, especially as it relates to breast cancer, we recommend that you discuss this with your physician before deciding whether including soy foods in your diet is right for you

Sensitivity /Allergy to Soy

Food allergies are abnormal responses of the body’s immune system to certain foods or ingredients. They can show up as rashes, swelling of the skin, nasal congestion, nausea and diarrhea or the most serious reaction – anaphylactic shock, which is life threatening. People with food allergies usually need to eliminate the problem foods from their diet altogether.

- Soy is a common source of food sensitivity
- Soy allergy is more common in infants; adults may suffer from soy allergy but it is rare
- The average age at which the allergy manifests is 3 months
- The majority of infants outgrow it by the age of two
- We recommend reading all ingredient labels and if in doubt, contact the manufacturer of the product before purchase about soy sensitivity

Pesticide Use

Pesticides are chemicals that are used to control pests that destroy crops. They are used in the production of most crops sold in the United States. These chemicals may increase your risk for cancer or other chronic diseases and should be limited in your diet.

Choose Organic

We recommend organic foods because they contain less pesticide residue. We believe they also provide better flavor and are a better nutritional choice than conventionally grown.

Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic food is produced without using most conventional pesticides, petroleum-based fertilizers, or sewage sludge-based fertilizers, bio-engineering, or ionizing radiation. Organic systems replenish and maintain soil fertility, eliminate the use of toxic and persistent pesticides and fertilizers, and build biologically diverse agriculture.

Ideas to increase soy consumption

1. Choose whole soy foods, such as miso, tempeh, tofu, soybeans, soynuts, and soy milk, over isolated soy products and supplements.
2. Avoid heavily-processed soy ingredients such as soy protein isolate, soy protein concentrate, hydrolyzed soy protein, and texturized soy protein.
3. To learn how to cook with soy foods, ask a friend for recipes, search the internet, or locate soy cookbooks.
4. **Edamamé** is usually located in the frozen section of the supermarket, and are available either in the pod or shelled. They cook quickly and can be eaten cold or warm, but don't eat the pod!
5. **Miso** is a main ingredient of miso soup, a traditional Japanese soup available in restaurants and in many grocery stores.
6. **Soybeans** can be used like dried and canned beans in soups, salsas and other dishes containing beans.
7. **Soymilk** can be used in place of cow's milk in cooking, baking and drinking. Try adding some to a smoothie or to soups or sauces. Soymilk comes in non-refrigerated aseptic boxes found on grocery shelves or refrigerated in plastic containers in the dairy section.
8. **Roasted soy nuts** are available in most grocery stores and are great for snacking on or adding to trail mix.
9. **Soy yogurt** is a great substitute for dairy yogurt and is available in the refrigerated section of most grocery stores.
10. **Tempeh** is sold in vacuum packed rectangle cakes/patties and can be used in place of meat in stir fries.
11. **Tofu** is found in water packed tubs in the refrigerated section or on grocery shelves in aseptic packages. Uses for tofu are endless:
    - Silken tofu, which is smooth and creamy, can be used in place of cream in soups or as a substitute for mayonnaise or sour cream in salad dressings and dip.
    - Soft tofu is moist and more firm than silken tofu and can be substituted for soft cheese like ricotta in your favorite Italian dish.
    - Firm and extra firm tofu will hold its texture and shape and can be used in place of meat in salads, grilled shish-ka-bobs or a fajita dish.

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Healing Foods Pyramid

This Facts About explains and gives examples of grains and starchy vegetables. We list foods with a guide for selecting an appropriate portion size and provide recommendations for incorporating healthy changes into your diet.

What are the recommended servings of grains & starchy vegetables per day?

- 4 -11 servings per day. For optimal health, we recommend only whole grains versus milled, processed or refined grains.

What are whole grains?

Grains are the seeds of plants. Whole grains contain all parts of the grain, including the bran, endosperm and germ.

- **Bran**. Forming the outer layer of the seed, the bran is a rich source of niacin, thiamin, riboflavin, magnesium, phosphorus, iron and zinc. The bran also contains the majority of the seed's fiber.
- **Germ**. A concentrated source of niacin, thiamin, riboflavin, vitamin E, magnesium, phosphorus, iron and zinc. The germ also contains protein and fat.
- **Endosperm**. Also called the kernel, the endosperm makes up the bulk of the seed. It contains most of the grain's protein and carbohydrate and has small amounts of vitamins and minerals.

What are milled, processed and refined grains?

- Unlike whole grains that contain at least part of their bran and germ layers, milled, processed and refined grains have both the bran and germ removed during processing; therefore all of the nutrients in these layers are also removed.
- They are often “enriched” which means nutrients that were lost during food processing are added back. For example, B vitamins, lost when wheat is refined, are added back to white flour during processing. However, even after enrichment, milled grains do not have as many nutrients as whole grains, and they do not provide as much fiber, if any.
- While whole grains are preferred, adding fiber -rich foods to milled or processed grains can lower the glycemic impact and moderate fluctuations in blood sugar. Therefore, foods such as pasta and white rice can be part of a healthy diet when combined with high fiber foods such as vegetables or beans.
- Examples of milled grains are white rice and white flour.

What are starchy vegetables?

- Starchy vegetables include corn, potatoes (all kinds including sweet), winter squash, plantains, and yucca (cassava root)
- These vegetables are higher in starch than other vegetables and are metabolized in your body more like a grain
- They are often used as the central starchy part of a meal, for example: mashed potatoes or polenta (milled corn)
- When used whole, they provide ample fiber and nutrients

- Their primary function is to provide energy for the body, especially the brain and the nervous system. The body breaks down starches into glucose, which the body uses for energy.

Why choose whole grains and starchy vegetables?

- They are rich sources of fiber and naturally low in fat
- An important source of vitamins and minerals, such as B vitamins, Vitamin E, folate, selenium, zinc and iron
- They contain a variety of phytochemicals and antioxidants
- They help form the foundation of healthy eating
- There is a wide variety to choose from
- Tend to have a low glycemic index, which helps to regulate blood sugar levels
- Associated with reduced risk of type 2 diabetes, constipation, diverticulitis, obesity, heart disease and some tyepes of cancer

Try replacing refined, processed and milled grains with a whole grain alternative

Choose Less Often		Choose More Often	
Milled/Refined Grains & Starchy Vegetables	**Serving Size**	**Whole Grains and Starchy Vegetables**	**Serving Size**
White / wheat bread	1 slice (1oz)	Whole wheat / whole grain bread	1 slice (1 oz)
White Rice	1/3 cup	Brown rice, millet, quinoa, barley or polenta	1/3 cup
Couscous	1/3 cup	Whole wheat couscous	1/3 cup
Pasta	1/3 cup	Whole wheat / multi grain pasta	1/3 cup
Crackers and Pretzels	3/4 oz	Whole grain crackers and pretzels	3/4 oz
Potato chips	3/4 oz	Tortilla chips	3/4 oz
Potato without skin	1 med	Potato with skin	1 med
Bagel, 4oz	1/4	Whole wheat / whole grain bagel, 4 oz	1/4
Pancake or waffle, 4 inches across	1	Whole grain pancake or waffle, 4 inches across	1
Pita bread, 6 inches across	1/2	Whole wheat pita, 6 inches across	1/2
Corn flakes, sugary breakfast cereal	3/4 cup	Oatmeal, cereal based on oats, barley or bran	3/4 cup

Specific Considerations

What is the glycemic index (GI)?

The glycemic index measures how different types of carbohydrate foods affect blood glucose (blood sugar) levels. The higher a food ranks on the glycemic index, the faster it increases glucose in the blood. Eating more than the recommended servings of foods high on the glycemic index can lead to loss of sensitivity to insulin, the hormone needed to allow blood sugar to enter cells for use as fuel. This "insulin resistance" promotes weight gain and type 2 diabetes.

- The glycemic index ranks carbohydrates on a scale from 0 to 100 according to the rate and extent that the sugars from these carbohydrates enter the blood and cause blood sugar levels to rise after eating
- Carbohydrates that breakdown quickly have the highest glycemic indexes
- Carbohydrates that breakdown slowly have low glycemic indexes

What is the glycemic load (GL)?

- GL builds on the glycemic index concept to provide a measure of total glycemic response to a food or meal based on serving size
- GL = GI (%) x grams of carbohydrate per serving

GI and GL Range Values

Glycemic Index (GI) Range	**Glycemic Load (GL) Range**	**Glycemic Load per Day**
Low GI = 55 or less	Low GL = 10 or less	Low GL < 80
Medium GI = 56-69	Medium GL = 11-19	High GL > 120
High GI = 70 or more	High GL = 20 or more	

Milled Grains and GI

When the fiber is removed from grains during the milling process, the refined carbohydrate that remains is converted to glucose by the body much more quickly during digestion. Therefore the milling process increases the GI of a particular grain, for example:

Grain	Glycemic Index (GI)	Glycemic Load (GL)
Milled - White rice, instant, 1 c	87 - High	36 - High
Whole - Brown rice, 1 c	50 - Low	16 - Medium

Fiber in the prevention of chronic disease

Constipation
Fiber adds bulk, aiding the movement of food through the gut, thus preventing constipation

Diverticulitis
Fiber also helps reduce the risk of diverticulitis, a condition in which small pouches in the colon wall may become infected

Type 2 Diabetes
Foods with a low glycemic index and high fiber, like many whole grains and starchy vegetables, do not raise blood sugar levels as quickly as milled and processed choices. Therefore, they are associated with a lower risk of type 2 diabetes. Low glycemic index foods are often high in fiber and include legumes, whole fruits, oats, bran and whole grain cereals.

Heart Disease
Fiber reduces fat and cholesterol absorption leading to lower total and LDL (bad) cholesterol levels

Obesity
Because insoluble fiber is indigestible and passes through the body virtually intact, it provides few calories. Since the digestive tract can handle only so much bulk at a time, and since fiber-rich foods are more filling than other foods, people on high fiber diets tend to eat less. Insoluble fiber also may hamper the absorption of calorie-dense dietary fat.

Cancer
Whole grains contain phytochemicals and antioxidants that can help lower your risk for cancer. Also, the fiber in whole grains can help move potential cancer- causing compounds through the intestines faster, reducing their chances of being reabsorbed into the body.

What are the health concerns associated with grains?

Gluten Intolerance

Celiac disease (CD) is also known as gluten intolerance. Gluten is the common name for the proteins in specific cereal grains that are not tolerated in persons with CD. These proteins are found in all forms of wheat (including durum, semolina, spelt, kamut, einkorn, and faro), and related grains, rye, barley, and tritcale. When individuals with CD ingest gluten, the villi, tiny hair-like projections in the small intestine that absorb nutrients from food are damaged. This is due to an immune reaction to gluten. Damaged villi interfere with the body's ability to absorb basic nutrients - proteins, carbohydrates, fats, vitamins, minerals, and, in some cases, water and bile salts.

Pesticide Use

Pesticides are chemicals that are used to control pests that destroy crops. They are used in the production of most crops sold in the United States. These chemicals may increase your risk for cancer or other chronic diseases and should be limited in your diet.

Choose Organic

We recommend organic grains because they contain less pesticide residue. We believe they also provide better flavor and are a better nutritional choice than conventionally grown produce.

Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic food is produced without using most conventional pesticides, petroleum-based fertilizers, or sewage sludge-based fertilizers, bio-engineering, or ionizing radiation. Organic systems replenish and maintain soil fertility, eliminate the use of toxic and persistent pesticides and fertilizers, and build biologically diverse agriculture.

How can you get more fiber and whole grains into your diet?

1. Reduce the amount of refined grains you eat. A good way to be sure a food item contains whole grains is to look at the fiber content-3 or more grams of fiber per serving is recommended.
2. Use breakfast cereals based on oats, barley and bran for breakfast or a snack.
3. Use “grainy” breads made from whole seeds.
4. Eat brown rice instead of white rice.
5. Experiment with cooking various whole grains like quinoia, barley and millet.

6. When buying bread products, read the label. If you see the word enriched, the product probably does not contain whole grains.
7. Wheat flour and whole wheat flour are not the same! Look for whole grain, stone ground, whole ground, whole wheat flour, whole oat flour or whole barley flour.
8. When eating a milled or processed grain, add foods with plenty of fiber (fruits, vegetables, legumes or whole grains) to lower glycemic impact.
9. Many foods are now available in whole wheat / whole grain versions: pasta, couscous, frozen waffles, pancake mixes, crackers, bagels and pretzels.

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Foods Pyramid

This Facts About reviews fruits and vegetables and gives examples of foods to choose. We provide a guide for selecting an appropriate portion size, and recommendations for incorporating healthy changes into your diet.

What are the recommended servings per day?

- Overall: more than 7 servings
- Vegetables: unlimited (minimum 5 servings)
- Fruits: 2-4 servings

Why should you choose fruits & vegetables?

- Excellent source of fiber
- Rich in vitamins and minerals
- Low in calories and most are fat-free
- Provide a food source of water; fruits and vegetables are made up of more than 50% water
- Abundant in phytochemicals and antioxidants
- High consumption helps reduce risk of various diseases such as cancer, obesity, heart disease, arthritis, asthma, macular degeneration and diverticulosis

What is the threshold effect?

Research supports evidence of an inverse relationship of fruit and vegetable consumption with development of chronic disease. This means that the more fruits and vegetables you eat, the less likely you are to develop a chronic disease. The most significant reductions in risk of illness are seen when individuals consume 7-10 servings of fruits & vegetables per day (the threshold). Therefore, to get the most health benefits we recommend a minimum “threshold” of 7 servings of fruits & vegetables daily.

A limited selection of fruits and vegetables

Fruits		Vegetables	
Apricots	Oranges	Asparagus	Parsnips
Blackberries	Papaya	Bell peppers	Radicchio
Blueberries	Passion fruit	Bok choy	Radishes
Cantaloupe	Peaches	Broccoli	Sorrel
Dates	Plums	Cabbage	Spinach
Guava	Pomegranate	Carrots	Swiss chard
Grapefruit	Raspberries	Cucumbers	Tomato
Honeydew melon	Star fruit	Green beans	Turnips
Kiwifruit	Tangelos	Kale	Watercress

Mango	Watermelon	Kohlrabi	Zucchini

Selected serving sizes of fruits & vegetables

Fruit or Vegetable	Serving Size
Raw leafy greens	1 cup
Baby carrots	6-7
Apple/Orange	Size of tennis ball
Banana	Medium
Grapes	17
Berries	¾ cup
Melon	chopped 1 cup
Raw, chopped fruit or vegetables	½ cup
Cooked vegetables	½ cup
Dried fruit	¼ cup

Specific Considerations

Phytochemicals

- Phytochemicals (‘phyto’means plant) are naturally occurring plant chemicals
- Phytochemicals are not yet classified as nutrients. Nutrients are substances necessary for sustaining life. Phytochemicals’ role in nutrition is still unfolding however, they have been identified as containing properties that aid in disease prevention
- In the human body, some phytochemicals act as antioxidants, some protect and regenerate essential nutrients, while others work to deactivate cancer-causing substances
- Thousands of phytochemicals have been identified in the plant foods we eat
- One serving of fruit or vegetables may contain 100 different phytochemicals. Some are available when the vegetable is raw, and others when the vegetable is cooked. It is important to eat a mix of raw and cooked vegetables to gain the most benefit from phytochemicals.
    - Cooking method matters; steaming helps retain water soluble vitamins like B vitamins and vitamin C rather than boiling
    - High cooking temperature and long cooking times also destroy heat sensitive nutrients such as B vitamins, vitamin C, and folate, so keep cooking times short

Antioxidants

The most well known phytochemicals are the antioxidants

- Antioxidants found in fruits and vegetables protect cells from damage caused by metabolic by-products (free radicals), as well as toxic substances from food and the environment. As our bodies use oxygen to produce energy, these free radicals are formed. They damage cells which may lead to cellular dysfunction and disease

- Colorful plant foods are loaded with antioxidants so eating a variety of fruits and vegetables is a great way to protect the body from oxidation, and therefore reduces the risk of numerous health conditions

Examples of antioxidants:

- Beta carotene - carrots, cantaloupe
- Vitamin C - citrus, cantaloupe, mango, and kiwi
- Vitamin E - dark leafy greens, broccoli
- Selenium – mushrooms, cabbage

Rainbow of Color

Phytochemicals contribute to the pigments of fruits and vegetables:

- Red - lycopene found in tomatoes, watermelon, & pink grapefruit
- Orange - beta carotene found in carrots, mangoes, & cantaloupe
- Yellow - beta cryptothanxin found in pineapple, oranges, & peaches
- Green - indoles found in broccoli, cabbage, & kale
- Purple - anthocyanins found in blueberries, grapes, & eggplant
- White – allicin found in garlic, onions, & chives

Research tells us that the more phytochemical-rich foods eaten, the lower the risk for diseases such as cancer and heart disease. Therefore we recommend eating a rainbow of fruits and vegetables daily.

Pesticide Use

Pesticides are chemicals that are used to control pests that destroy crops. They are used in the production of most crops sold in the United States. These chemicals may increase your risk for cancer or other chronic diseases and should be limited in your diet. To reduce consumption of pesticides, follow these tips:

- Wash all fruits and vegetables with water
- Before eating apples, cucumbers, potatoes or other produce in which the outer skin or peeling is consumed, scrub with a brush
- Throw away the outer leaves of leafy vegetables, such as lettuce and cabbage
- Peel and cook when appropriate, although some nutrients and fiber may be lost when produce is peeled

Choose Organic

We recommend organic fruits and vegetables because they contain less pesticide residue. We believe they also provide better flavor and are a better nutritional choice than conventionally grown produce.

Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic food is produced without using most conventional pesticides, petroleum-based fertilizers, or sewage sludge-based fertilizers, bio-engineering, or ionizing radiation. Organic systems replenish and maintain soil fertility, eliminate the use of toxic and persistent pesticides and fertilizers, and build biologically diverse agriculture.

According to the Consumers Union and The Environmental Working Group, the top fruits and vegetables to buy organic because of potential pesticide residue are:

- Peaches
- Apples
- Pears
- Green beans
- Grapes
- Strawberries
- Raspberries
- Spinach
- Tomatoes
- Cantaloupe

Ways to Transition to Organic Fruits and Vegetables

- Shop at farmers markets
- Buy a share in a community supported agriculture (CSA) program
    - For more information, check out http://www.nal.usda.gov/afsic/csa/
- Join a food co-op
- Buy organic produce in-season and freeze/preserve
- Grow your own fruits and vegetables
- Ease into buying organic produce

Ideas to Increase Fruits and Vegetable Consumption

1. Do it gradually.
2. Snack on raw vegetables instead of chips and crackers. To keep it interesting, try dipping vegetables in hummus, salsa or low-fat dip.
3. Add fruit to your cereal or yogurt at breakfast.
4. Order salads as an appetizer when out to dinner.
5. Get creative. Add vegetables to dishes that don't always include them, like scrambled eggs, rice or pasta dishes, pizza and casseroles.
6. Drink your fruit (including fruit just past it's prime) in the form of a fruit smoothie.
7. Choose salads as your main course for lunch or dinner. For variety, top your salads with dried cranberries, sunflower seeds or other nuts.
8. In hot weather, frozen fruit such as grapes, sliced kiwis, sliced peaches and strawberries are a refreshing snack.
9. Enjoy salad bars at restaurants or grocery stores.
10. When craving a sweet treat, try dried fruit.
11. Buy fresh fruits and vegetables in season.
12. Frozen fruit and vegetables are frozen soon after harvest and can be eaten during the off season as a nutritious alternative to fresh produce.
13. Watch local grocery advertisements for reduced prices on your favorite fruits and vegetables.
14. Try fruit for dessert.
15. Prepare fruits and vegetables ahead of time in a way you like to eat them so they are readily available and desirable to you when you are hungry.
16. Fill half of your plate with fruits and/or vegetables.
17. Choose a rainbow of fruits and vegetables daily.

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Healing Foods Pyramid

This Facts About reviews water and provides a guide for selecting appropriate portion sizes and recommendations for incorporating healthy changes into your diet.

What are the recommended servings of water per day?

Although the data regarding optimal water intake is unclear, as a guide to ensure adequate hydration under normal circumstances, we recommend:

- Women: Drink 8 cups (64 oz./approx. 2 liters) per day
- Men: Drink 12 cups (96 oz./approx. 3 liters) per day

The vast majority of healthy people adequately meet their daily hydration needs by letting thirst be their guide.

Why should you drink water?

- It is an essential nutrient and makes up > 60% of adult body weight
- It is needed for all body functions, such as nutrient digestion, absorption, transport, and metabolism
- It aids in body-temperature maintenance
- It is vital to electrolyte balance
- Water contains no calories or fat
- May help with weight loss by acting as a natural appetite suppressant
- Prevents complications from dehydration, such as headache or fatigue
- May benefit people with respiratory diseases by thinning mucous secretions that worsen asthma
- May help people who experience recurrent urinary tract infections by increasing their urine flow
- May help reduce cancer risk of the colon, kidneys, bladder

How much water do you need?

The equivalent of 8 cups of water for women and 12 cups of water for men is the minimum amount of fluid recommended daily to replace water losses under conditions of moderate activity, mild temperature, and altitude.

Fluid requirements increase due to exercise, environmental factors, fever, pregnancy, and other conditions.

Exercise	**Environment**	**Pregnancy**
Before: 2 cups, 2 hours before exercising *During*: ½ -1 cup every 15-20 minutes *After*: 2 cups of fluid for every pound of body weight you lost during exercise	Increase fluid intake under these conditions: - Hot or humid climates - During/after sun exposure - In heated, indoor air - In cold weather while wearing insulated clothing - In high altitudes	Pregnant women should drink 2.3 liters (about 10 cups) per day Women who breastfeed should drink 3.1 liters (about 13 cups) per day.

Dietary Sources

- Your diet provides the water your body needs. In an average adult diet, food provides about 20 percent of total water intake. The remaining 80 percent comes from beverages you drink.

- Beverage requirements are met best by consuming plain water. You can also choose herbal or green tea (hot or iced), diluted fruit juice, sparkling water, or add lemon/lime juice to plain water.
- Fruits and vegetables contain lots of water and are also good sources of vitamins, minerals and fiber. However, your daily water requirement of 8 glasses for women and 12 for men should be consumed above and beyond the water that is consumed as food.
- While alcoholic beverages (like beer or wine) and caffeinated beverages (like coffee and colas) can contribute to your total fluid intake, they also have diuretic properties which can cause you to urinate more often and dehydrate more easily.

Specific Considerations

Dehydration

Too little water can lead to dehydration, a condition that occurs when you do not have enough water in your body to carry out normal functions. Even mild dehydration can make you tired. Signs and symptoms of dehydration include:

- Excessive thirst
- Fatigue
- Headache
- Dry mouth
- Little or no urination
- Muscle weakness
- Dizziness
- Lightheadedness

Drinking Too Much Water

- Drinking too much water is uncommon but may lead to hyponatremia, a condition in which excess water intake dilutes the normal amount of sodium in the blood
- Symptoms of water intoxication include nausea, vomiting, fatigue, and confusion
- Check with your doctor or a registered dietitian if you're concerned about drinking too much or too little water

Chlorine and Lead

Chlorine and lead are the two most common contaminants in tap and some bottled water. Although it may serve an important role in a public water supply, chlorine is a strong oxidizing agent and may increase the risk of heart disease and certain cancers. Small amounts of lead may be toxic, especially in infants, children, and pregnant women. The following are some ideas to increase the likelihood that your drinking water is safe:

- Use a quality bottled water
- If bottled water is too expensive for regular use, get into the habit of flushing your kitchen faucet daily by letting water run for about three minutes
- Have tap water tested to see if impurities exist
- State and local health departments often do free tests for bacterial contamination
- To find out about toxic substances, such as lead, arsenic, and high levels of chlorine, use a private testing lab
- A home purifying/filter system can help
- A home water distillation system may produce the purest water

Ideas to Increase Water Consumption

1. Keep a pitcher of herbal iced tea in the fridge.
2. Add fresh lemon or lime to juice to water.
3. Drink hot herbal tea.
4. We do not recommend drinking sodas because they are void of essential nutrients.
5. We do not recommend drinking juices because they are high in calories and usually lack the fiber of whole fruit.
6. Drink a glass of water with each meal and between each meal.
7. Take water breaks instead of coffee breaks.
8. Substitute sparkling water for alcoholic drinks at social gatherings.
9. Carry water in your car.
10. Keep a water bottle with you and drink throughout the day. To keep a reusable bottle clean, wash it in hot, soapy water or run it through the dishwasher before refilling it.

These factors suggest you may be consuming enough water every day:

- You drink enough water to quench your thirst
- You produce a colorless or slightly yellow, normal amount of urine
- You fell well

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