



# CURRICULUM ON WELLNESS:

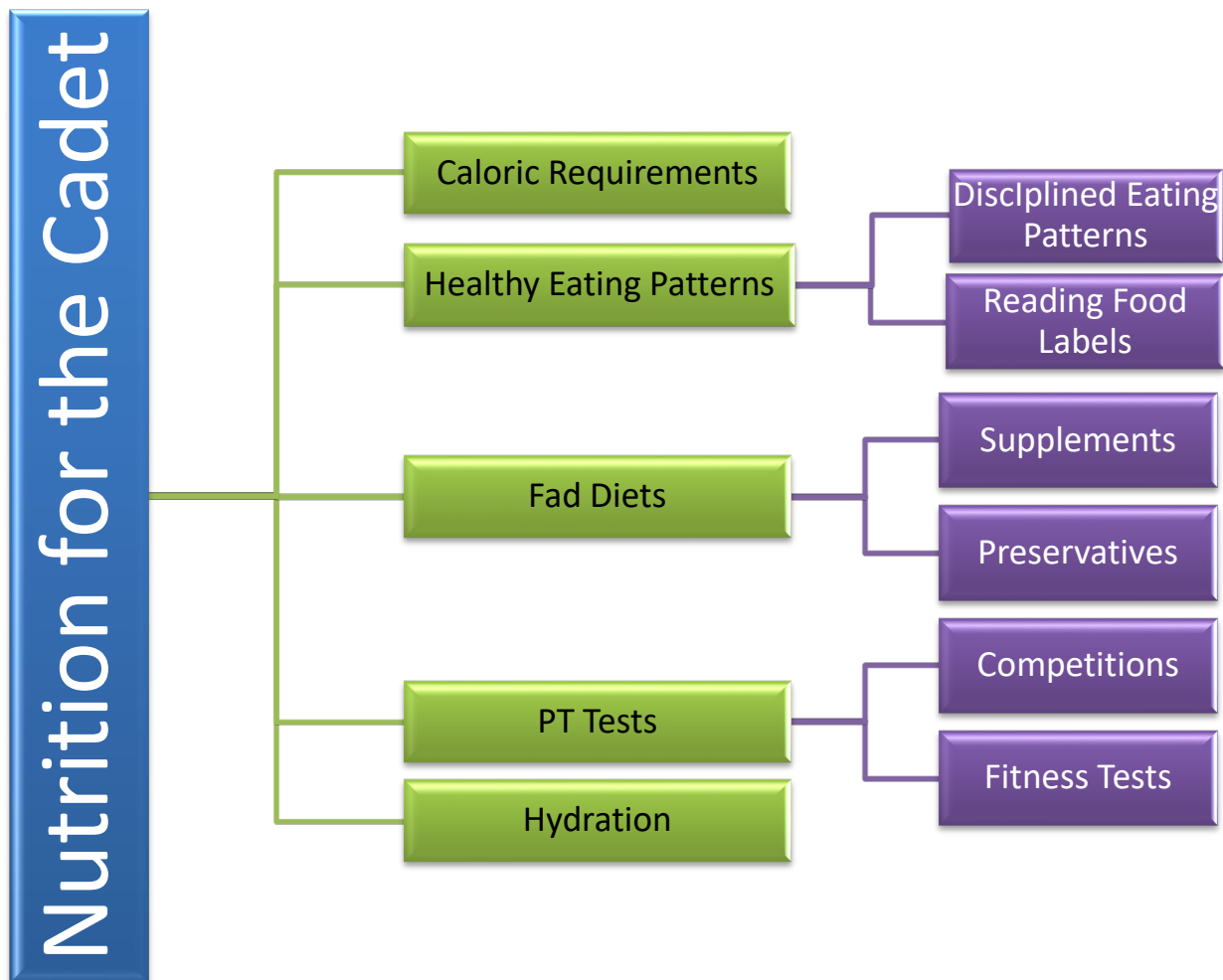
## Nutrition for the Cadet

Strand W4: Nutrition

Level 11

This Strand is composed of the following components:

- A. Nutrition of the Student
- B. Nutrition for the Cadet**
- C. Nutrition for the Athlete/Field



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## B. Nutrition for the Cadet

### **STANDARD #4: Cadets participate in a variety of fitness and wellness activities.**

#### **OBJECTIVES**

##### **DESIRED OUTCOME (Self-Mastery)**

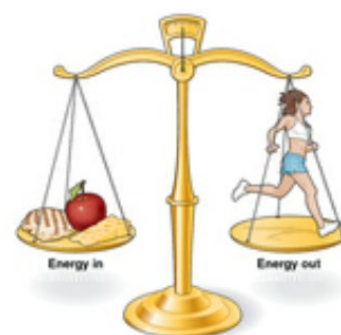
*The desired outcome of this unit is for cadets to learn various nutritional facts, proper diets of nutrition, and planning for specific activities in a student cadet's life.*

##### **Plan of Action:**

1. Define energy balance, caloric intake, and caloric expenditure
2. Define a Kcal and compare Kcal to cal
3. Explain and expand on each individual tier of the Physical Activity Pyramid
4. List the 3 stages as the Slogan of the CDC for establishing healthy eating habits.
5. Define each of the 3 stages of the Reflect, replace and enforce model
6. Understand that the USDA has tools for aiding in improving healthy eating
7. Define discipline in the matter of healthy eating
8. List the main concepts of The Definite Dozen with explanations
9. Understand the Principle of Reinforcement
10. Define each indicator found on labels and what information each of the 4 indicators holds
11. Define Fad diets, compare them to healthy balanced diets learned in previous sections
12. Understand what dietary supplements are and what is in them
13. Define and understand performance enhancing drugs such as anabolic steroids, peptides, hormones, and diuretics; explain the health risks of all.
14. Understand Carbo-loading and High Protein diets, explain their effectiveness or ineffectiveness.
15. Understand the anatomical importance of factors relating to hydration, dehydration, and hyponatremia.
16. Explain the similarities and differences between heat stroke and heat exhaustion.

## B1. Caloric Requirements for Moderately Active Lifestyle

Caloric requirements are often defined as **energy balance**, which is a combination of two factors, **caloric intake**, energy in/food ingested and **caloric expenditure**, calories used/burned during physical activity or workouts, as seen in the balance scale image. It is important to define the terms **calorie**, which is the amount of energy in food products, and **Kilo-calorie (Kcal)** is a unit of energy or heat. In the simplest description, weight management is always calories in vs Kcals burned. In order to balance caloric intake, for example, of 3,500 calories, in order to not gain weight the individual must burn 3,500 kcals in the same amount of time. The number of 3,500 is significant because 3,500 is equal to one pound of fat. If the amount isn't balanced or superseded through burning energy, weight gain begins.



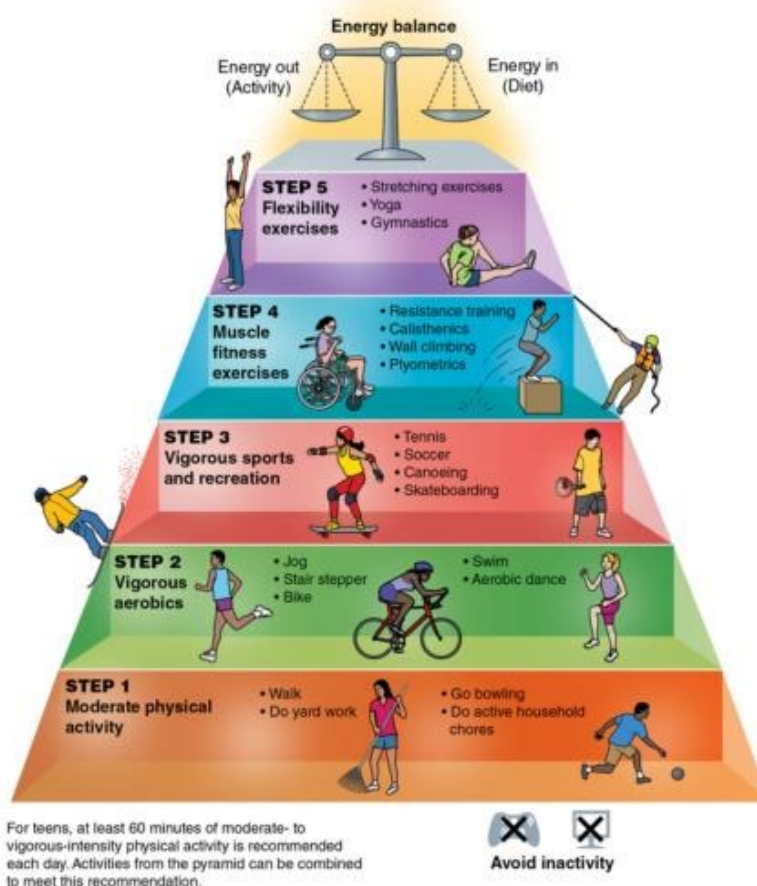
**Table 13.7** shows examples of an individual's weight to 1 hour of select exercises to calorie burn. These are based on moderate to vigorous exercise intensities (Corbin, 2014).

**TABLE 13.7 Energy Expenditure**

Calories used per hr based on weight					
	100 lb (45 kg)	120 lb (54 kg)	150 lb (68 kg)	180 lb (82 kg)	200 lb (91 kg)
Backpacking/Hiking	307	348	410	472	513
Badminton	255	289	340	391	425
Baseball	210	238	280	322	350
Basketball (half-court)	225	240	300	345	375
Bicycling (normal speed)	157	178	210	242	263
Bowling	155	176	208	240	261
Canoeing (4 mph [6.5 kph])	276	344	414	504	558
Circuit training	247	280	330	380	413
Dance (ballet/modern)	240	300	360	432	480
Dance (aerobic)	300	360	450	540	600
Dance (social)	174	222	264	318	348
Fitness calisthenics	232	263	310	357	388
Football	225	255	300	345	375
Golf (walking)	187	212	250	288	313
Gymnastics	232	263	310	357	388
Horseback riding	180	204	240	276	300
Interval training	487	552	650	748	833
Jogging (5.5 mph [9 kph])	487	552	650	748	833
Judo/Karate	232	263	310	357	388
Racquetball/Handball	450	510	600	690	750
Rope jumping (continuous)	525	595	700	805	875
Running (10 mph [16 kph])	625	765	900	1,035	1,125
Skating (ice or roller)	262	297	350	403	438
Skiing (cross-country)	525	595	700	805	875
Skiing (downhill)	450	510	600	690	750
Soccer	405	459	540	575	621
Softball (fastpitch)	210	238	280	322	350
Swimming (slow laps)	240	272	320	368	400
Swimming (fast laps)	420	530	630	768	846
Tennis	315	357	420	483	525
Volleyball	262	297	350	403	483
Walking	204	258	318	372	426
Weight training	352	399	470	541	558

The Physical Activity Pyramid has five tiers to achieve the ideal balance. From the base to the top of the model is moderate physical activity, vigorous aerobics, vigorous sport and recreation, muscle fitness exercise, and flexibility exercises. **Moderate physical activity** is utilized in the long term for controlling fat accumulation. **Vigorous aerobics** is more intense than moderate activities, it is continuous leading to a slightly higher caloric expenditure. **Vigorous sport and recreation** is even more intensity of activity and allows for more calories to be burned due to the increase in time spent on it. **Muscle fitness exercises** see more caloric burn due to the type of exercise; it is a dense workout and even after a workout continues to help burn calories due to the body needing to rebuild the muscles, using energy to do so. **Flexibility exercises** are not a high-calorie burner type exercise, but they burn more calories than just resting and are a necessary need for overall fitness (Corbin, 2014).

The best way to calculate daily expenditure is to follow all that is laid out in prior CACC Text Wellness 3B8: Fitness for Balance.



### Check on Understanding:

1. \_\_\_\_\_ is the stage of the physical activity pyramid that burns the most calories.
2. A calorie and a Kcal are the same thing? (T/F)
3. It's safe to say that the more you weigh the more calories you burn during exercises and activities? (Yes or No)

## B2. Healthy Eating Patterns for A Cadet Requirement

The simplest way to help adolescents to establish healthy eating patterns is to follow the steps provided by the Center for Disease Control (CDC). The CDC has a three-stage slogan of "reflect, replace, and reinforce". **Stage one: reflect** says to make a list of eating/snacking habits like a food diary, then annotate habits such as eating too quickly, eating when not hungry, dessert intake, and skipping meals. This allows you to identify unhealthy habits and create a list of cues of when you may be triggered to eat, (examples: opening the refrigerator or cabinet when not hungry, seeing food on a counter and partaking, feeling bored or tired and just grabbing food). Lastly, ask questions according to your cue list

about avoiding bad food and seeking healthy food. **Stage two, replace**, is to replace unhealthy habits with healthier ones, to eat slower, ensure you eat only when hungry, and to plan well-balanced meals. **Stage three, reinforce**, is the mental health and integrity portion of the guidance. This stage is clear about being patient with oneself, that the change isn't instantaneous, forgive oneself if missteps take

place and to take it one day at a time toward progress (CDC, 2019). Building eating patterns that are healthy is critical to success. The designing of a pattern is affected by factors such as genetics, chronic diseases, income, religion, culture, education age, and environment (Titchenal, 2018). In order to help plan the new improved eating pattern, ChooseMyPlate has a free online widget or digital planner that takes the



United States Department of Agriculture

## MyPlate Plan

### Find your Healthy Eating Style

Everything you eat and drink matters. Find your healthy eating style that reflects your preferences, culture, traditions, and budget—and maintain it for a lifetime! The right mix can help you be healthier now and into the future. The key is choosing a variety of foods and beverages from each food group—and making sure that each choice is limited in saturated fat, sodium, and added sugars. Start with small changes—“MyWins”—to make healthier choices you can enjoy.

Food Group Amounts for 2,200 Calories a Day				
<b>Fruits</b> 2 cups	<b>Vegetables</b> 3 cups	<b>Grains</b> 7 ounces	<b>Protein</b> 6 ounces	<b>Dairy</b> 3 cups
Focus on whole fruits that are fresh, frozen, canned, or dried.	Choose a variety of colorful fresh, frozen, and canned vegetables—make sure to include dark green, red, and orange choices.	Make half your grains whole grains by reading the Nutrition Facts label and ingredients list.	Mix up your protein foods to include seafood, beans and peas, unsalted nuts and seeds, soy products, eggs, and lean meats and poultry.	Move to low-fat or fat-free milk or yogurt.
<b>Limit</b> Drink and eat less sodium, saturated fat, and added sugars. Limit: • Sodium to 2,300 milligrams a day. • Saturated fat to 24 grams a day. • Added sugars to 55 grams a day.				

Be active your way: Children 6 to 17 years old should move 60 minutes every day. Adults should be physically active at least 2 1/2 hours per week.

individual's information and suggests the desire to maintain or lose weight. It then creates a direct ChooseMyPlate meal substance plan to build the individual's meal plan from. It generates a PDF of how many calories and what category intake amounts are needed with spots a person can fill in if they reached the target or not (Agriculture, 2020).

## MyPlate Plan

Write down the foods you ate today and track your daily MyPlate, MyWins!

Food group targets for a 2,200 calorie* pattern are:		Write your food choices for each food group:		Did you reach your target?		Limit
<b>Fruits</b> 2 cups	1 cup of fruits counts as: • 1 cup raw or cooked fruit; or • 1/2 cup dried fruit; or • 1 cup 100% fruit juice.			Y	N	
<b>Vegetables</b> 3 cups	1 cup vegetables counts as: • 1 cup raw or cooked vegetables; or • 2 cups leafy salad greens; or • 1 cup 100% vegetable juice.			Y	N	
<b>Grains</b> 7 ounce equivalents	1 ounce of grains counts as: • 1 slice bread; or • 1 ounce ready-to-eat cereal; or • 1/2 cup cooked rice, pasta, or cereal.			Y	N	<b>Activity</b> Be active your way: <b>Adults:</b> • Be physically active at least 2 1/2 hours per week. <b>Children 6 to 17 years old:</b> • Move at least 60 minutes every day.
<b>Protein</b> 6 ounce equivalents	1 ounce of protein counts as: • 1 ounce lean meat, poultry, or seafood; or • 1 egg; or • 1 Tbsp peanut butter; or • 1/4 cup cooked beans or peas; or • 1/2 ounce nuts or seeds.			Y	N	
<b>Dairy</b> 3 cups	1 cup of dairy counts as: • 1 cup milk; or • 1 cup yogurt; or • 1 cup fortified soy beverage; or • 1 1/2 ounces natural cheese or 2 ounces processed cheese.			Y	N	* This 2,200 calorie pattern is only an estimate of your needs. Monitor your body weight and adjust your calories if needed.

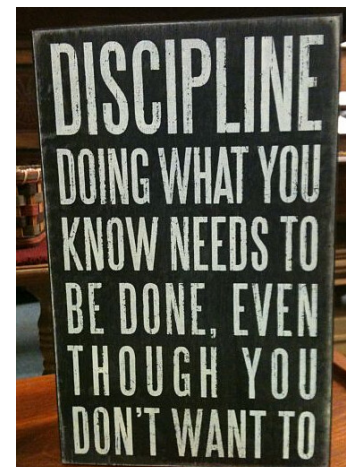
**MyWins** Track your MyPlate, MyWins

Center for Nutrition Policy and Promotion  
January 2016  
USDA is an equal opportunity provider and employer.

To establish a pattern in healthy/healthier eating, an individual must create a sense of discipline. In the common understanding, **discipline** is learning to be obedient; training oneself to improve on a skill or regimen, and sticking to it. When an individual begins to discipline themselves in creating improved eating habits, they must also do their research on how to safely, effectively, and realistically achieve their desired goal.

To establish any change in behavior is heavily rooted in psychology. The Definite Dozen, developed by Pat Summitt, is a competitive principle mostly related to sports performance but can be used as productive steps to developing a disciplined eating habit pattern. The *how* to institute positive eating patterns is following the Definite Dozen:

1. **Respect yourself and others**- an individual cannot have self-respect without giving respect to others.
2. **Take full responsibility**- be candid as possible in accountability, there are no shortcuts to success
3. **Develop and demonstrate loyalty**- be loyal to yourself and don't cheat. i.e. in your food journals or diaries. Seek out quality people to be around to support you





4. **Learn to be a good communicator**- listen to input and give honest feedback when it comes to the topics of accolades, discipline, downfalls, struggles, and other accountable factors to a supportive person or group
5. **Discipline yourself, so no one has to**- if you have an accountability partner or group be truthful with yourself and them
6. **Make hard work your passion**- do the hard stuff first, plan your work & work your plan, do not eat dessert first.
7. **Don't just work hard, work smart**- Focus on your strengths to minimize your weaknesses
8. **Put the team before you**- in group success there is individual success. Your team can be family, friends, and champions for you in your life
9. **Make winning an attitude** - positive attitude is a choice
10. **Be a competitor**- be the best you that you can be daily. Win!
11. **Change is a must**- Push yourself to places you haven't been before
12. **Handle success like you handle failure** - you can't always control what happens, but you can control how you handle it. Learn from failure. Continue to seek new goals (Gould, 2015).

There are a few more principles and approaches that aid in the intrinsic motivation that help aid discipline in sport and nutrition. The *why* to institute positive eating patterns is following the principles of reinforcement. The **principle of reinforcement** is rooted in rewards and punishments to do an action correctly. Ultimately if an individual does well or reaches a benchmark they engage in a "treat" or a reward; if the benchmark is not met the punishment is a relative and safe action. (Gould, 2015).

#### Check on Understanding:

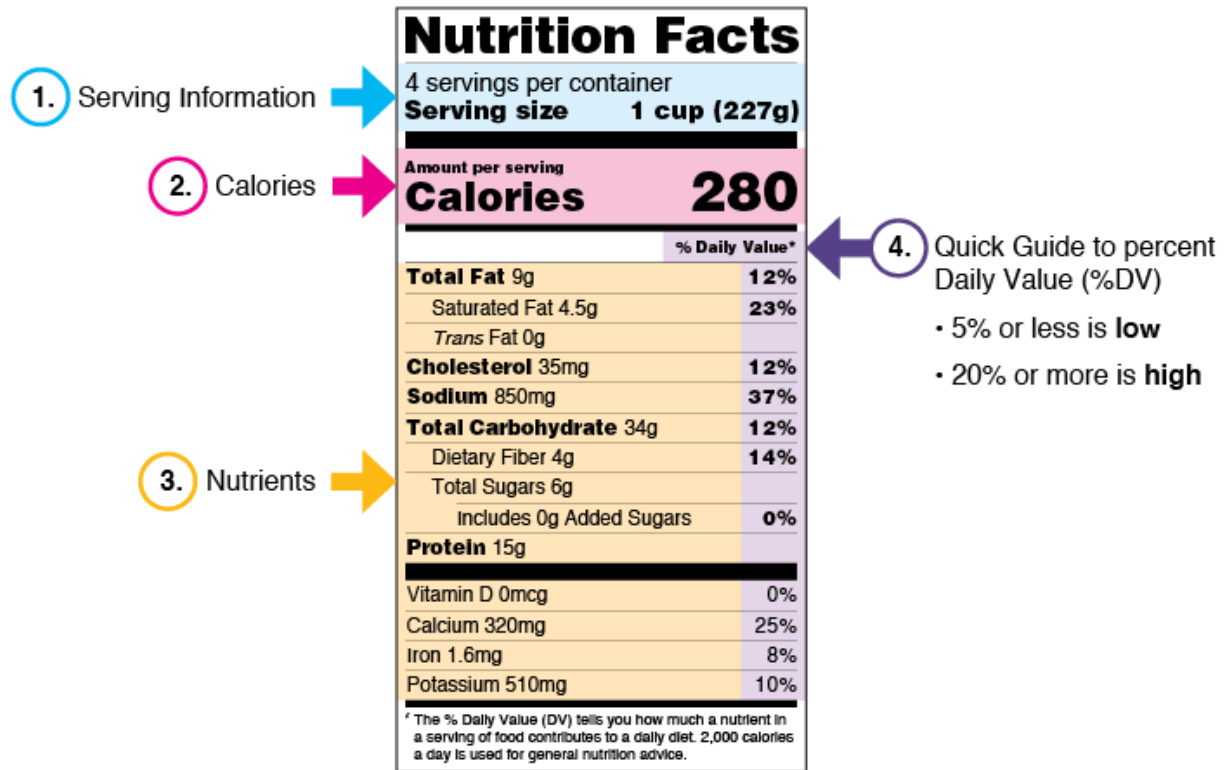
1. Name the CDC three-stage slogan.
2. Changing pattern of eating healthy is an easy task for everyone (T/F)
3. [www.ChooseMyPlate.gov](http://www.ChooseMyPlate.gov) is a costly resource for changing eating patterns (Yes/No)
4. What trait is key to establishing patterns in healthier eating?

### B3. Reading Nutrition Labels

Nutrition labels in common terms are **food labels**, nutritional information that appears in the food that is packaged that is regulated by the United States of Department of Agriculture (USDA). The labels consist of six indicators that break down various categories of ingredients.

The information in the main or top section (see #1-4) of the sample nutrition label (below) can vary with each food and beverage product; it contains product-specific information (serving size, calories, and nutrient information). The bottom section contains a footnote that explains the % Daily Value and gives the number of calories used for general nutrition advice.

In the following Nutrition Facts label we have colored certain sections to help you focus on those areas that will be explained in detail. Note that these colored sections are not on the actual food labels of products you purchase. (FDA, 2020)



### 1. Serving Information (#1 on sample label)

When looking at the Nutrition Facts label, first take a look at the number of servings in the package (servings per container) and the serving size. Serving sizes are standardized to make it easier to compare similar foods; they are provided in familiar units, such as cups or pieces, followed by the metric amount, e.g., the number of grams (g). The serving size reflects the amount that people typically eat or drink. It is not a recommendation of how much you should eat or drink.

It's important to realize that all the nutrient amounts shown on the label, including the number of calories, refer to the size of the serving. Pay attention to the serving size, especially how many servings there are in the food package. For example, you might ask yourself if you are consuming  $\frac{1}{2}$  serving, 1 serving, or more. In the sample label, one serving of lasagna equals 1 cup. If you ate two cups, you would be consuming two servings. That is two times the calories and nutrients shown in the sample label, so you would need to double the nutrient and calorie amounts, as well as the %DVs, to see what you are getting in two servings.

4 servings per container
<b>Serving size</b> <b>1 cup (227g)</b>



## 2. Calories (#2 on sample label)

Calories provide a measure of how much energy you get from a serving of this food. In the example, there are 280 calories in one serving of lasagna. What if you ate the entire package? Then, you would consume 4 servings, or 1,120 calories.

Amount per serving	
<b>Calories</b>	<b>280</b>

To achieve or maintain a healthy body weight, balance the number of calories you eat and drink with the number of calories your body uses. 2,000 calories a day is used as a general guide for nutrition advice. Your calorie needs may be higher or lower and vary depending on your age, sex, height, weight, and physical activity level. Learn your estimated calorie needs at <https://www.choosemyplate.gov/resources/MyPlatePlan>. Remember: The number of servings you consume determines the number of calories you actually eat. Eating too many calories per day is linked to overweight and obesity.

## 3. Nutrients (#3 on sample label)

Look at section 3 in the sample label. It shows you some key nutrients that impact your health. You can use the label to support your personal dietary needs – look for foods that contain more of the nutrients you want to get more of and less of the nutrients you may want to limit.

<b>Total Fat</b> 9g	<b>12%</b>
Saturated Fat 4.5g	<b>23%</b>
Trans Fat 0g	
<b>Cholesterol</b> 35mg	<b>12%</b>
<b>Sodium</b> 850mg	<b>37%</b>
<b>Total Carbohydrate</b> 34g	<b>12%</b>
Dietary Fiber 4g	<b>14%</b>
Total Sugars 6g	
Includes 0g Added Sugars	<b>0%</b>
<b>Protein</b> 15g	
Vitamin D 0mcg	0%
Calcium 320mg	25%
Iron 1.6mg	8%
Potassium 510mg	10%

Nutrients to get less of: Saturated Fat, Sodium, and Added Sugars. Saturated fat, sodium, and added sugars are nutrients listed on the label that may be associated with adverse health effects – and Americans generally consume too much of them, according to the recommended limits for these nutrients. They are identified as nutrients to get less of. Eating too much saturated fat and sodium, for example, is associated with an increased risk of developing some health conditions, like cardiovascular disease and high blood pressure. Consuming too much added sugars can make it hard to meet important nutrient needs while staying within calorie limits.

## What are Added Sugars and How are they Different from Total Sugars?

Total Sugars on the Nutrition Facts label includes sugars naturally present in many nutritious foods and beverages, such as sugar in milk and fruit as well as any added sugars that may be present in the product. No Daily Reference Value has been established for total sugars because no recommendation has been made for the total amount to eat in a day.

Added Sugars on the Nutrition Facts label include sugars that are added during the processing of foods (such as sucrose or dextrose), foods packaged as sweeteners (such as table sugar), sugars from syrups and honey, and sugars from concentrated fruit or vegetable juices. Diets high in calories from added sugars can make it difficult to meet daily recommended levels of important nutrients while staying within calorie limits.

Note: Having the word “includes” before Added Sugars on the label indicates that Added Sugars are included in the number of grams of Total Sugars in the product. For example, a container of yogurt with added sweeteners, might list:

<b>Total Sugars</b> 15g	
Includes 7g Added Sugars	<b>14%</b>

This means that the product has 7 grams of Added Sugars and 8 grams of naturally occurring sugars – for a total of 15 grams of sugar.

Nutrients to get more of: Dietary Fiber, Vitamin D, Calcium, Iron, and Potassium. Dietary fiber, vitamin D, calcium, iron and potassium are nutrients on the label that Americans generally do not get the recommended amount of. They are identified as nutrients to get more of. Eating a diet high in dietary fiber can increase the frequency of bowel movements, lower blood glucose and cholesterol levels, and reduce calorie intake. Diets higher in vitamin D, calcium, iron, and potassium can reduce the risk of developing osteoporosis, anemia, and high blood pressure.

#### 4. The Percent Daily Value (%DV) (#4 on sample label)

The % Daily Value (%DV) is the percentage of the Daily Value for each nutrient in a serving of the food. The Daily Values are reference amounts (expressed in grams, milligrams, or micrograms) of nutrients to consume or not to exceed each day. The %DV shows how much a nutrient in a serving of a food contributes to a total daily diet.

The %DV helps you determine if a serving of food is high or low in a nutrient.

Do you need to know how to calculate percentages to use the %DV?

No, because the label (the %DV) does the math for you! It helps you interpret the nutrient numbers (grams, milligrams, or micrograms) by putting them all on the same scale for the day (0-100%DV). The %DV column doesn't add up vertically to 100%. Instead, the %DV is the percentage of the Daily Value for each nutrient in a serving of the food. It can tell you if a serving of food is high or low in a nutrient and whether a serving of the food contributes a lot, or a little, to your daily diet for each nutrient.

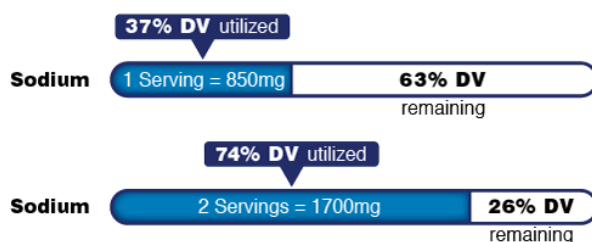
	% Daily Value*
<b>Total Fat</b> 9g	<b>12%</b>
Saturated Fat 4.5g	<b>23%</b>
Trans Fat 0g	
<b>Cholesterol</b> 35mg	<b>12%</b>
<b>Sodium</b> 850mg	<b>37%</b>
<b>Total Carbohydrate</b> 34g	<b>12%</b>
Dietary Fiber 4g	<b>14%</b>
Total Sugars 6g	
Includes 0g Added Sugars	<b>0%</b>
<b>Protein</b> 15g	
Vitamin D 0mcg	0%
Calcium 320mg	25%
Iron 1.6mg	8%
Potassium 510mg	10%

Note: some nutrients on the Nutrition Facts label, like total sugars and *trans* fat, do not have a %DV – they will be discussed later.

#### General Guide to %DV

- 5% DV or less of a nutrient per serving is considered low
- 20% DV or more of a nutrient per serving is considered high
- More often, choose foods that are:
- Higher in %DV for Dietary Fiber, Vitamin D, Calcium, Iron, and Potassium
- Lower in %DV for Saturated Fat, Sodium, and Added Sugars

*Example:* Look at the amount of sodium in one serving listed on the sample nutrition label. Is %DV of 37% contributing a lot or a little to your diet? Check the General Guide to %DV. This product contains 37% DV for sodium, which shows that this is a HIGH sodium product (it has more than 20% DV for sodium). If you consumed 2 servings, that would provide 74% of the DV for sodium – nearly three-quarters of an entire day's worth of sodium.



**Compare Foods:** Use %DV to compare food products (remember to make sure the serving size is the same) and more often choose products that are higher in nutrients you want to get more of and lower in nutrients you want to get less of.

**Understand Nutrient Content Claims:** Use %DV to help distinguish one claim from another, such as "light," "low," and "reduced." Simply compare %DVs in each food product to see which one is higher or lower in a particular nutrient. There is no need to memorize definitions.

**Dietary Trade-Offs:** You can use the %DV to help you make dietary trade-offs with other foods throughout the day. You don't have to give up a favorite food to eat a healthy diet. When a food you like is high in saturated fat, balance it with foods that are low in saturated fat at other times of the day. Also, pay attention to how much you eat during the entire day, so that the total amount of saturated fat, as well as other nutrients you want to limit, stays below 100%DV.

#### Upper Limit - Eat "Less than"...

Upper limit means it is recommended that you stay below or eat "less than" the Daily Value nutrient amounts listed per day. For example, the DV for saturated fat is 20g. This amount is 100% DV for this nutrient. What is the goal or dietary advice? To eat "less than" 20 g or 100%DV each day.

#### Lower Limit - Eat "At least"...

The DV for dietary fiber is 28g, which is 100% DV. This means it is recommended that you eat "at least" this amount of dietary fiber on most days.

*Nutrients Without a %DV: Trans Fats, Protein, and Total Sugars:*

Note that *Trans* fat and Total Sugars do not list a %DV on the Nutrition Facts label. Protein only lists a %DV in specific situations listed below.

*Trans* Fat: Experts could not provide a reference value for *trans* fat nor any other information that FDA believes is sufficient to establish a Daily Value.

According to the *Dietary Guidelines for Americans*, there is evidence that diets higher in *trans* fat are associated with increased blood levels of low-density lipoprotein (LDL or "bad") cholesterol—which, in turn, are associated with an increased risk of developing cardiovascular disease. Note: most uses of artificial *trans* fat in the U.S. food supply have been phased out as of 2018.

**Protein:** A %DV is required to be listed if a claim is made for protein, such as "high in protein." The %DV for protein must also be listed on the label if the product is intended for infants and children under 4 years of age. However, if the product is intended for the general population 4 years of age and older and a claim is not made about protein on the label, the %DV for protein is not required.

Current scientific evidence indicates that protein intake is not a public health concern for adults and children over 4 years of age in the United States.

Total Sugars: No Daily Reference Value has been established for Total Sugars because no recommendations have been made for the total amount to eat in a day. Keep in mind that the Total Sugars listed on the Nutrition Facts label include naturally occurring sugars (like those in fruit and milk) as well as Added Sugars.

### Nutrition Facts Label Variations

Many Nutrition Facts labels on the market will be formatted in the same way as the lasagna label that has been used as an example throughout this page, but there are other formats of the label that food manufacturers are permitted to use. This final section will present two alternate formats: the dual-column label and the single-ingredient sugar label.

### Dual-Column Labels

For certain products that are larger than a single serving but that could be consumed in one sitting or multiple sittings, manufacturers will have to provide “dual column” labels to indicate the amounts of calories and nutrients on both a “per serving” and “per package” or “per unit” basis. The purpose of this type of dual-column labeling is to allow people to easily identify how many calories and nutrients they are getting if they eat or drink the entire package/unit at one time. For example, a bag of pretzels with 3 servings per container might have a label that looks like this to show you how many calories and other nutrients would be in one serving and in one package (3 servings).

<b>Nutrition Facts</b>			
3 servings per container			
<b>Serving size</b>		<b>3 pretzels (28g)</b>	
<b>Calories</b>	<b>Per serving</b>	<b>Per container</b>	
	<b>110</b>	<b>330</b>	
	% DV*	% DV*	
<b>Total Fat</b>	0.5g	1%	1.5g 3%
Saturated Fat	0g	0%	0g 0%
Trans Fat	0g		0g
<b>Cholesterol</b>	0mg	0%	0mg 0%
<b>Sodium</b>	400mg	17%	1200mg 52%
<b>Total Carb.</b>	23g	8%	69g 24%
Dietary Fiber	2g	7%	6g 21%
Total Sugars	<1g		3g
Incl. Added Sugars	0g	0%	0g 0%
<b>Protein</b>	3g		9g
Vitamin D	0mcg	0%	0mcg 0%
Calcium	10mg	0%	30mg 2%
Iron	1.2mg	6%	3.6mg 18%
Potassium	90mg	0%	270mg 5%

\* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

### Single-Ingredient Sugar labels

<b>Nutrition Facts</b>	
16 servings per container	
<b>Serving size 1 Tbsp. (21g)</b>	
<b>Amount per serving</b>	
<b>Calories</b>	<b>60</b>
	% Daily Value*
<b>Total Fat</b> 0g	<b>0%</b>
Saturated Fat 0g	<b>0%</b>
Trans Fat 0g	
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 0mg	<b>0%</b>
<b>Total Carbohydrate</b> 17g	<b>6%</b>
Dietary Fiber 0g	<b>0%</b>
Total Sugars 17g	<b>34%<sup>†</sup></b>
<b>Protein</b> 0g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 0mg	0%

\* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.  
<sup>†</sup> One serving adds 17g of sugar to your diet and represents 34% of the Daily Value for Added Sugars.

Packages and containers of products such as pure honey, pure maple syrup, or packages of pure sugar are not required to include a declaration of the number of grams of Added Sugars in a serving of the product but must still include a declaration of the percent Daily Value for Added Sugars. Manufacturers are encouraged, but not required, to use the “+” symbol immediately following the Added Sugars percent Daily Value on single-ingredient sugars, which would lead to a footnote explaining the amount of added sugars that one serving of the product contributes to the diet as well as the contribution of a serving of the product toward the percent Daily Value for Added Sugars. Single-ingredient sugars and syrups are labeled in this way so that it does not look like more sugars have been added to the product and to ensure that consumers have information about how a serving of these products contributes to the Daily Value for added sugars and to their total diet.

Here is an example of how a label on a single-ingredient sugar, such as honey,

could look. (FDA, 2020)

### Check on Understanding:

1. If a bag of chips contains 3 servings and a serving is 160 calories, how many calories are you eating if you eat the whole bag?
2. Who regulates food labels?
3. Is saturated fat healthy for you? How about dietary fiber? How can you tell from the nutrition label?

## B4. Fad Diets, Supplements, Preservatives

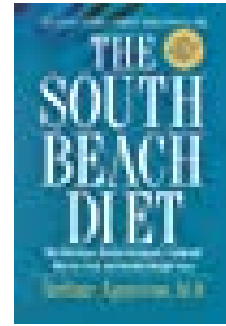
**Fad Diets** are in the category of popular diets, and sometimes are not always rooted in scientific evidence. These diets are usually widespread in the North American regions that promise to shed excess pounds. Fad diets sometimes consist of dietary restrictions and may not always be nutritionally sound, causing a flurry



of health issues or long-term problems. Some examples of nutritionally unsound diets are the **South Beach Diet** - a low-carb diet;

**Gluten-Free** is a wheat, barley or rye free

diet; and **Macrobiotic diet**, which is rooted in the philosophy of Yin and Yang in Buddhist culture and is very low-calorie (it poses a risk to starvation) (Titchenal, 2018).



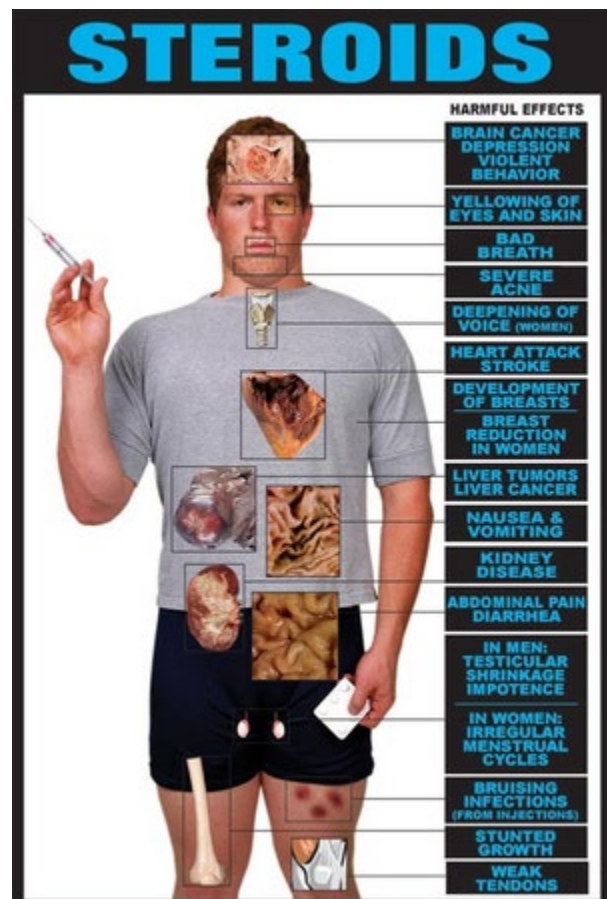
**Dietary supplements** are substances taken by mouth intended to supplement a diet. Supplements include vitamins, minerals, amino acids, botanical products, and herbs, as well as additives such as enzymes, glandulars, organ tissues, and metabolics. These substances can be capsules, tablets, powders, and liquids, etc. They cannot be labeled as drugs, but as a food type because they are regulated under the Dietary Supplement Health and Education Act (DSHE) of 1994. There are literally thousands of dietary supplements for various reasons: to build stronger bones, regulate blood sugar, maintain bowel reliability, etc. (Bagchi, 2019).



### Performance enhancing drugs are

sometimes sold under the guise of food supplements, but they can have serious side-effects and shouldn't be taken unless prescribed by a doctor. A few popular ones are **anabolic steroids (AS)** or **anabolic-androgenic steroids (AAS)**, mostly used to improve physical appearance. Steroid use increases muscle strength and skeletal muscle mass.

**Peptide hormones**, a type of growth hormone which increases the rate of breakdown of fats, and **diuretics** such as fasting pills, diet pills, laxatives, and enemas are sold for quick weight reduction. All of these performance supplements and enhancements have a slew of health complications including liver and kidney problems, enlarged heart, high blood pressure, risk of stroke and heart attack, hair loss, acne, and mood swings and aggression. Side effects from **Peptide Hormones/ Growth Hormones (GH)**, are serious and are long term or irreversible, such as **myocardial ischemia** (artery disease, plaque buildup in the artery), **myocardial infarction** (complete blockage in the artery, heart attack) and **angina** (chest pain) due to use. **Diuretics** will cause a suppressed immune system, causes





thermal regulation to be out of balance, bone loss, electrolyte imbalance, and fatigue. They can lead to malnutrition, stunt growth, and can cause hyperthermia (Bagchi, 2019). Human growth hormone, and anabolic steroids, are only not illegal when they are obtained and used with the permission and direction of a doctor (Corbin, 2014).

Preservatives are a double-edged sword. The food contains substances such as **preservatives** that are considered non-nutrients that may be harmful. This includes toxins, cholesterol, and additives that are dyed. They can also be beneficial, such as added antioxidants. Manufacturers of foods have to add preservatives to food to give them a shelf life and prevent items from spoiling too quickly. These are usually items like sodium (salt) and sugars. (Titchenal, 2018).

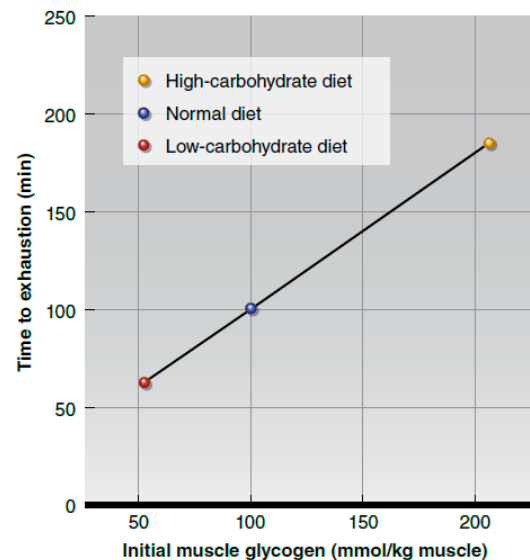
#### **Check on Understanding:**

1. Fad diets are highly effective and safe (T/F)
2. Anabolic steroids are usually used to improve \_\_\_\_\_.
3. Diet pills, laxatives, and enemas are all d\_\_\_\_\_.

### B5. Nutrition for PT Tests, Competitions, And Fitness Tests

Glycogen is a form of glucose (sugar) that the body warehouses for future use. Glycogen delivers a large amount of energy during exercise. It prevents muscle fatigue. Scientists Gollnick, Piehl, and Saltin speculated that loading the body with ample glycogen would increase sports/exercise performance. Research on that theory found that males who ate a high carbohydrate diet three days before a performance day had nearly twice as much glycogen in their muscles and still had roughly 25% excess energy to contribute to their performance. This type of nutrition practice is known as **glycogen loading** or **carbohydrate loading**, an individual increase carbohydrate intake to store the energy in the body before a prolonged endurance, or high-performance activity. This practice is widely used by distance runners, cyclists, and extreme exercisers.

**Figure 15.9** shows the relationship of glycogen in the body based on diet and endurance. Research has also shown that **high protein diets** do not ultimately increase performance or endurance (Wilmore, 2008). **Fat-loading** is the same principle of carbo-loading, but with fat substances, not carbohydrates, and is not found to be effective or beneficial in various exercises from any controlled data study (Bagchi, 2019).



**FIGURE 15.9** The relation between preexercise muscle glycogen content and exercise time to exhaustion. The exercise time to exhaustion and muscle glycogen were nearly four times greater when the subjects ate a carbohydrate-rich diet than when the diet was composed mostly of fat and protein.

#### **Check on Understanding:**

1. Carbohydrate loading is also known as \_\_\_\_\_.
2. High Protein diets are more beneficial than carbo-loading before exercise. (T/F)
3. Explain why carbohydrate loading works.
- 4.



## B6. Hydration

Hydration of the body is completely controlled by **Antidiuretic hormone (ADH)** also known as **arginine vasopressin**. It is a hormone secreted from the pituitary glands whose function is to regulate water and electrolyte balance in the blood by controlling how much water is excreted in urine. Hydration is completely controlled by ADH, ensuring the blood is not saturated or dehydrated with water. It also ensures the body conserves water. It is important to maintain hydration levels. When there is an endurance exercise, activity, or high-performance challenge, an individual should prepare for this by regularly drinking water days before, during, and after the event (Wilmore, 2008).



**Hydration** is the balance of water fluids in the blood and body. **Dehydration** is water loss in the body or loss of body fluid. The output of water through basic bodily functions is completed through evaporation from the skin, respiratory tract, kidneys, and large intestines. During exercise, the amount of water being expelled is determined by environmental temperature, body size, and metabolic rate.



**Hyponatremia** is when the blood sodium levels drop below normal

ranges of 136 to 143mmol/L. (Wilmore, 2008).

Dehydration can lead to headaches, fatigue, mental problems, and loss of control of actions, lack of concentration, mood changes, and heat-related illnesses (Corbin, 2014). Lack of replenishing water to balance the body can lead to **heat exhaustion**. Symptoms include fatigue and weakness, excessive sweating, nausea or vomiting, a rapid, weak pulse, and heat cramps. Treatment is to get to a cooler place, drink water if fully conscious, take a cool shower, or use a cool compress. **Heatstroke** is a very serious medical condition; the body completely fails to maintain body temperature, usually resulting in a fever of 103 degrees or higher. The symptoms are headache, cessation of sweating, nausea or vomiting, a rapid, strong pulse, confusion, or unconsciousness. Heat stroke can lead to death. Treatment is to get professional medical care as quickly as possible. Meanwhile, reduce body temperature any way you can – ice bath, soaking in cool water, cooler environment, etc. (Wilmore, 2008).

### Check on Understanding:

1. Explain the differences between Heat Exhaustion and Heatstroke.
2. What does ADH stand for?
3. Define dehydration.

HEAT EXHAUSTION	HEAT STROKE
Faint Or Dizzy Excessive Sweating Cool, Pale, Clammy Palms Nausea or Vomiting Rapid, Weak Pulse Muscle Cramps	Throbbing Headache Sweating Stops Temperature Over 103 deg. Nausea or Vomiting Rapid, Strong Pulse Loss of Consciousness
<b>STAY SAFE</b> <b>DRINK WATER</b> <b>TAKE A BREAK</b> <b>AVOID PEAK TEMPS</b> <b>WORK IN TEAMS</b> <b>WEAR SUNSCREEN</b>	
<b>TREATMENT OPTIONS</b> Get to a cooler, air conditioned area Drink water if fully conscious take a cool shower use a cool Compress	<b>CALL 9-1-1 Immediately</b> Reduce Temperature Until Emergency Services Arrive

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