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# Basic Nutrition: An Introduction

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This lecture has been created to provide a brief and introductory course on the basic principles of nutrition.



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## ***Presentation Overview***

- ***Understand the role & importance nutrition plays on your health***
- ***Review the basic nutrients, what they offer, and good sources of each***
- ***The role of snacking and it's impact on your diet***
- ***Understand the importance of portion control***
- ***Identify some of the helpful resources that are available***

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In today's lecture, you will identify the importance of nutrition and it's role in a healthy lifestyle. We will only scratch the surface on some of the details of nutrition, including definitions and general foods for the basic nutrients, healthy snacking tips, as well as portion control. Finally, We will look at a few of the excellent resources available to us which provide relevant and accurate information.



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## ***Benefits of Nutrition***

***Good nutrition can positively impact & influence the following:***

- Weight Regulation***
- Mental & Physical Performance***
- Overall Energy Level***
- Reduced risk of short and long term diseases***
- Healthier & stronger immune system***

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Incorporating positive eating habits can make a huge impact and improve a variety of factors and conditions in your life. This encompasses more than just your work performance; it affects your personal health and well being for both the short and long term. The overall goal is to feel good and energized, which can be greatly affected by what your putting in your body on a daily basis.



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## ***Poor Nutrition***

### ***Risks related to following a bad diet:***

- Decreased performance and overall work production***
- Heart disease***
  - Other conditions may also contribute to heart disease:***
    - High blood pressure***
    - High cholesterol***
- Diabetes***
- Weight gain***
- Cancers***
- Sleep apnea & other respiratory conditions***

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In contrast, following a poor diet and bad eating habits can increase the risk of developing a variety of undesirable health conditions. The negative effects go far beyond gaining weight, which is the most common association to poor eating. Poor nutrition does not always lead to gaining weight, and may negatively affect us in a variety of other ways, including decreased energy levels and loss of sleep, as well as joint pain and muscle soreness.



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## Review of the Basics

- **6 Categories of Nutrients**

- **Protein**                      **4kcal/gram**
- **Fat**                              **9kcal/gram**
- **Carbohydrates**      **4kcal/gram**
  
- **Vitamins**
- **Minerals**
- **Water**



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Lets quickly review all of the nutrients and discuss the importance of each nutrient in our daily diets.

Nutrients are classified into 6 categories. Today, our primary focus will be on the 3 nutrients that provide energy: carbohydrate, protein, and fat. Vitamins, minerals, and water are the other classes, and will be discussed briefly.



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# Protein

## ***Specific functions include:***

- ***Needed for Growth and Repair***
  - *Excess does not enhance strength*
- ***Enable muscles to contract***



***Important to consume with carbohydrate options for any snack or meal***

## ***Good Sources:***

***Meats & fish, eggs, dairy products, beans, nuts, and seeds***

***Focus on lean or low fat products, and choose grilled/baked/roasted options to minimize added fat***

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Protein is one of the three nutrients that provides energy, at 4 kilocalories per gram. It does have a role in muscle synthesis and rebuilding, however an excess in protein does not automatically equal increased strength or larger muscles!

While it can be used as an energy source, it's important to understand that it has a variety of other roles in the body and excess consumption is just as likely to lead to fat storage and weight gain as the other two nutrients.

All animal products offer an abundance of protein and it's important to choose lean and low fat options. A small portion of meat, 2-3 ounces, can offer between 20-25 grams of protein. Grains, beans, and nuts also provide protein as well.



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## Fat

### ***In foods, fats contribute:***

- *texture*
- *taste*
- *flavor*
- *aroma to foods.*



***Proper types are needed to repair, rebuild, and protect body.***

***Don't have to supplement or reload fats due to exercise.***

- ***Desirable Sources: Fish, lean meats, olives & oils, low fat dairy products, nuts and seeds***
- ***Undesirable Sources: High fat dairy products, fatty meats, variety of condiments and cream based sauces***

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Moderate amounts of fat are need in the diet to support a variety of internal functions. Fat also contributes desirable tastes and textures to foods and can be used to create more palatable food sources. Beneficial sources include unsaturated fats from fish, nuts and seeds, olive and canola oil, as well as peanut and almond butters. Other fats that should be limited include saturated fats like creams, butters, high fat dairy products, and fatty meats. Most foods that are prepared via deep frying or similar methods should also be avoided.



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# Carbohydrates

- ***Made of glucose, which is what's in our blood***
- ***Needed for:***
  - ***Energy: Preferred source for body***
  - ***Brain function***
  - ***Proper health and functioning in body***
  - ***Storage form in body: Glycogen***



***Good choices: Milk, yogurt, whole fruits and starchy vegetables, 100% whole grain products such as pasta, oatmeal, brown rice, breads and cereals***

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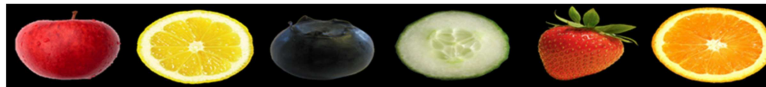
Carbohydrates are the primary fuel source for our body and are needed for optimal performance and energy levels. There are many forms and variations of carbohydrates and it's important to focus on less processed options when possible. Whole, frozen, dried, or canned fruits without added sugar or ingredients are best. When considering breads and grains, half your choices should be 100% whole grain and whole wheat products. Portion size, especially for pastas, rice, and cereals, is often an issue. With any food option, especially carbohydrate foods, it is important to ensure other nutrients, such as protein and fat, are also included in the meal. For example, a piece of fresh fruit like a banana or apple could be accompanied by a Tbsp of peanut butter or ½ cup of cottage cheese.



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## ***Vitamins & Minerals***

- ***At any age, the body requires a variety***
- ***Want good amount of each for proper and healthy functioning***
- ***Foods from all the food groups***
  - ***Dairy, Meat and Beans, fruits, vegetables, and grains***
- ***Minimally processed fruits & vegetables provide best sources.***



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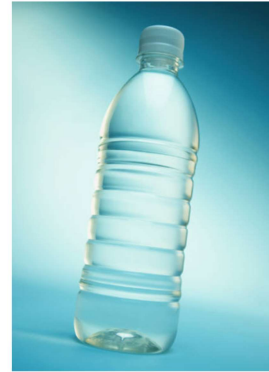
A diet that consists of wholesome fruits and vegetables will offer an abundance of minerals and vitamins. Good sources include fresh, frozen, canned (without any added sugar). 100% fruit juice will provide a variety of nutrients, but should be limited due to the excess sugar. Whole grain products and a variety of lean meats will also provide multiple nutrients as well.



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# Water

- ***Transport mechanism***
  - *Main component of blood*
- ***Eliminates waste products***
- ***Temperature regulation***
  - *Heat escapes in sweat*
- ***Involved in biochemical reactions***
  - *Digestion and energy production*
- ***Lubricates joints and cushions organs***



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The functions and importance of water in the body are limitless. How we feel and our energy levels are often closely related to our hydration status. Throughout the day, it is always important to promote water and other calorie-free beverages, which may also help curb your appetite. Coffee, sodas, alcohol and other similar beverages will negatively influence your hydration status among other problems. Beyond what you drink, many fresh foods, especially fruits and vegetables, will also provide an additional water source.



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## Hydration Guidelines

- **Performance/work can be directly affected by poor hydration**

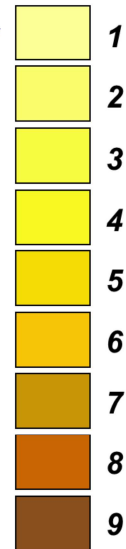
– **1liter of water loss (~1.5% body weight) can lead to:**

- **Increased heart rate**
- **Increased core temperature**
- **Lack of concentration**
- **Difficulty breathing**

- **Drink before you're thirsty!**

– **Thirst is a sign that you are already dehydrated**

- **Urine Color provides an immediate indicator**



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Hydration status will also affect your performance and work output in a variety of ways. If you sweat one Liter of water, which would equate to approximately 30-40 minutes of exercise in a warm climate, your heart will have to beat eight extra times per minute, your heart will also pump out 1 liter less blood, and your body temp will increase. All of these conditions will lead to decreased production and body efficiency, and negatively impact your performance. Also, this problem may not occur immediately, it may develop from one or even several days of inadequate hydration. Taking note of your urine color is one simple and quick method to estimate your hydration status.

The darker the color, the more dehydrated you may be. Food and vitamins can also affect urine color, but this is still a good general guideline.

When you are properly hydrated, it's common to go to the bathroom every 3-4 hours, which makes it easier to monitor. However, as you get dehydrated, the ability to urinate will decrease as the body is trying to preserve as much water as possible.



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# Energy Balance

## Basal Metabolism

- ☐ Minimal number of calories the body uses for basic function
- ☐ The body needs an ample amount of energy throughout the day
- ☐ Influencing factors to BMR

- |  |  |
|--|--|
| <input type="checkbox"/> Activity levels   | <input type="checkbox"/> Calorie intake          |
| <input type="checkbox"/> Body composition  | <input type="checkbox"/> Fever                   |
| <input type="checkbox"/> Gender            | <input type="checkbox"/> Stimulant drugs         |
| <input type="checkbox"/> Age               | <input type="checkbox"/> Pregnancy and lactation |
| <input type="checkbox"/> Body surface area | <input type="checkbox"/> Recovery after exercise |

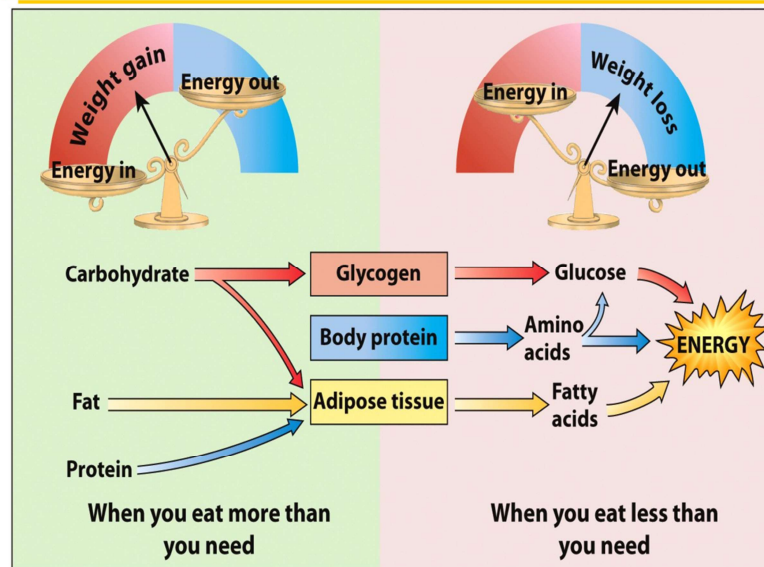
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Basal metabolism, also known as basal metabolic rate (BMR), is the minimal number of calories your body would need without including any activity or function. Many individuals that try to calorie count or use online counting tools, start with their BMR as a baseline. One of the most important concepts for energy balance is to understand that no two individuals are the same. What works for one may not work for another and it's because of the variety of factors listed above. One individual may need 2000 calories a day, while another may need 5,000 calories. Many individuals try restrictive and low calorie diets, however, at a very minimum, the body still needs to be fueled for a variety of internal factors.



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On the basic principal, energy in=energy out. However, the types of food you eat, such as fiber-rich fruits and vegetables and lean, low fat meats, can be just as important and our body may respond differently to what we consume.

Important to look at this model and understand that no matter what you eat, too much of anything will equal the same thing: fat storage!

For any change, the importance is on small adjustments, either above or below the normal requirements, depending on your goal.



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## ***Optimal Eating Habits***

### ***Beneficial Eating Behaviors Include:***

- Eating breakfast or eating within ~1 hour of waking up***
  - Helps prevent craving and overeating later on in the day***
- Control your portion sizes***
  - Eat when you are hungry, not just because food is available***
- Drink plenty of water or non-caloric beverages throughout the day***
- Choosing nutritious snacks between your meals***

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There are many good eating habits that reflect a healthier lifestyle. Adopting good eating habits usually focuses on behavior change and something that can be sustained for the long term.

Eating breakfast close to when we wake up sets us up for the day and helps prevent overeating and even some cravings.

Currently, one of our biggest and most common problems in our eating style is portion control. Slowing down when we eat and pre-portioning our servings are just a few tips to reduce our portions. A visual of adequate portion sizes for a variety of food groups is attached in a few slides.

Beyond meals, snacking plays a huge part in if our eating habits are good or bad. We'll look at both good and bad habits of snacking.



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## Nutritious Snacks

### Anytime Snacks

- *Fresh fruit & plain low fat greek yogurt or cottage cheese*
- *Hard boiled eggs*
- *Beef jerky*
- *Fruit smoothies/fruit pops/fruit salad*
- *Crackers and low-fat cheese*
- *Hummus & pita chips or vegetables*
- *Guacamole or Salsa with low fat or baked chips*

### On the Go Snacks

- *Peanut butter on crackers or whole wheat bread*
- *Quick breads such as banana or zucchini bread*
- *Low-fat string cheese individually packed*
- *Trail mix, dried fruit, unsalted nut mix*
- *Oatmeal bars or ready to eat cereal*
- *Bars: Natures Valley, Kind, Lara, Luna, or Odwalla brands*

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Forget what can be a healthy snacking choice...As long as the focus remains on a variety of foods and includes an assortment of nutrients, it's probably a good option. Keep balance and moderation in mind. The focus for snacks is to get you to the next meal, while providing a good amount of nutrients and moderate amount of calories. As mentioned earlier, always try to "pair" foods together to ensure you get multiple nutrients which will help with filling you up and keeping you satisfied until your next meal.



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## Poor Snacking

### Problem with most common convenient snack foods

- Easily accessible → often eat excess
- Small amount → high amount of calories
- Most provide too much of similar ingredients: saturated fat and simple sugar



M&M Candy  
40 grams = 200 calories



Peanut Butter Crackers  
39 grams = 200 calories



Cheetos  
38 grams = 200 calories



Potato Chips  
37 grams = 200 calories



Hershey Kisses  
36 grams = 200 calories



Sliced and Toasted Almonds  
35 grams = 200 calories

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Snacks can be useful throughout the day as previously shown, however improper snacking can be just as detrimental to one's diet as anything else. Choosing highly processed items as our common snack leads to weight gain and other negative outcomes.

Depending on the food type, even small portions can quickly add up on total calories. Look at some of the "convenient" snack foods above and observe how easily a small portion can equal 200 calories.

Portions of everything we eat become extremely important throughout the day. Let's get a better understanding of what a normal portion size is.



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#### Quick Tips:

3-4 ounces of meat is about the size and thickness of a deck of playing cards.



A medium sized piece of fruit is the size of a tennis ball.



1 ounce of cheese is about the size of four stacked dice.



1/2 cup of ice cream is the size of a tennis ball.



1 cup of mashed potatoes is the size of your fist (depending on your size; commonly the size of a female fist).



1 ounce of nuts should fit into the small of your hand.



1 teaspoon of margarine or butter is about the size of the tip of your thumb.



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The images on the right represent a portion size of a certain type of food. Please be aware that most serving sizes are smaller than the portion sizes. This is especially important for most grain options. For example, one cup of rice or mashed potatoes is equivalent to a fist or tennis ball. However, one serving of either option is only ~1/3 of a cup. Meaning, one fist or tennis ball would give us 3 servings of that item. When considering what we eat and how much, this is extremely important. This is where choosing vegetables and a variety of foods can be extremely important and providing balance to our diet.



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# Available Resources

<http://www.choosemyplate.gov/>

**10 tips**  
Nutrition  
Education Series

**choose MyPlate**  
10 tips to a great plate



**Making food choices for a healthy lifestyle can be as simple as using these 10 Tips.**  
Use the ideas in this list to *balance your calories*, to *choose foods to eat more often*, and to *cut back on foods to eat less often*.

**1 balance calories**

Find out how many calories YOU need for a day as a first step in managing your weight. Go to [www.ChooseMyPlate.gov](http://www.ChooseMyPlate.gov) to find your calorie level. Being physically active also helps you balance calories.

**2 enjoy your food, but eat less**

Take the time to savor your food as you eat it. Eating too fast or when your attention is elsewhere may lead to eating too many calories. Pay attention to hunger and fullness cues before, during, and after meals. Use them to recognize when to eat and when you've had enough.



**3 avoid oversized portions**

Use a smaller plate, bowl, and glass. Portion out foods before you eat. When eating out, choose a smaller size option, share a dish, or take home part of your meal.

**4 foods to eat more often**

Eat more vegetables, fruits, whole grains, and fat-free or 1% milk and dairy products. These foods have the nutrients you need for health—including potassium, calcium, vitamin D, and fiber. Make them the basis for meals and snacks.



**5 make half your plate fruits and vegetables**

Choose red, orange, and dark-green vegetables like tomatoes, sweet potatoes, and broccoli, along with other vegetables for your meals. Add fruit to meals as part of main or side dishes or as dessert.

**6 switch to fat-free or low-fat (1%) milk**

They have the same amount of calcium and other essential nutrients as whole milk, but fewer calories and less saturated fat.



**7 make half your grains whole grains**

To eat more whole grains, substitute a whole-grain product for a refined product—such as eating whole-wheat bread instead of white bread or brown rice instead of white rice.

**8 foods to eat less often**

Cut back on foods high in solid fats, added sugars, and salt. They include cakes, cookies, ice cream, candies, sweetened drinks, pizza, and fatty meats like ribs, sausages, bacon, and hot dogs. Use these foods as occasional treats, not everyday foods.



**9 compare sodium in foods**

Use the Nutrition Facts label to choose lower sodium versions of foods like soup, bread, and frozen meals. Select canned foods labeled "low sodium," "reduced sodium," or "no salt added."



**10 drink water instead of sugary drinks**

Cut calories by drinking water or unsweetened beverages. Soda, energy drinks, and sports drinks are a major source of added sugar, and calories, in American diets.



USDA United States Department of Agriculture  
Center for Nutrition Policy and Promotion

Go to [www.ChooseMyPlate.gov](http://www.ChooseMyPlate.gov) for more information.

DIG TipSheet No. 1  
June 2011  
USDA is an equal opportunity provider and employer.

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The United States Department of Agriculture website [www.Choosmyplate.gov](http://www.Choosmyplate.gov) is a great resource that provides a wealth of handouts and information and also gives us a simple idea of what a plate should look like. This is one handout that provides 10 simple tips/guidelines to improving your plate.



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## Additional Resources

- **Mission Nutrition Course**

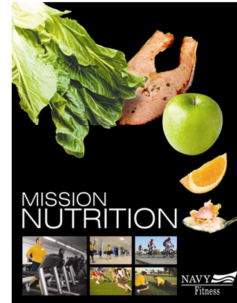
- **2 day science-based nutrition education course**

- **Topics include**

- **Basic Nutrition**
    - **Performance Nutrition**
    - **Fad Diets**
    - **Dietary supplements**
    - **Grocery shopping**
    - **Reading food labels**

- **Offered by trained MWR fitness specialists**

- **Check your local Navy Fitness center for more information**



[www.navyfitness.org/nutrition/mission\\_nutrition/](http://www.navyfitness.org/nutrition/mission_nutrition/)

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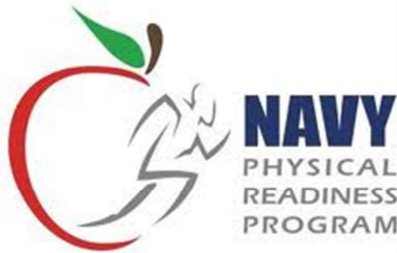
Mission nutrition is a standardized nutrition course that provides practical and relevant information. This course is offered by certified instructors at variable Navy Fitness centers and open to anyone.



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## Additional Resources

<http://www.public.navy.mil/bupers-npc/support/physical/>



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The physical readiness program website provides relevant and great information for the sailors and also includes a variety of internal links and places to search for familiar information. Within this website, you can also search for Registered Dietitians that may be available at your local MTF.



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## ***Additional Resources***

# HPRC

HUMAN PERFORMANCE RESOURCE CENTER  
[hprc-online.org](http://hprc-online.org)

<http://hprc-online.org/>

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The Human Performance Resource Center is a website that is regularly updated and answers a variety of questions and topics that are currently in the news. They also have a wealth of resources and information for any topic related to nutrition, fitness, and overall health.



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## Questions?



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The listed resources give an abundance of information on nutrition and optimal health. Within each website, they also provide you a variety of internal links and additional resources to explore. These are just a few of the resources available, but a great starting point when looking for accurate and relevant information.