# Dietary assessment and body composition testing

In the United States, the Department of Health and Human Services (HHS) and the United States Department of Agriculture (USDA) produce the *Dietary Guidelines for Americans* (HHS & USDA, 2015), a document that serves as a resource for health professionals and those involved in policy decisions involving nutrition.

One set of important recommendations within the DRIs are the Acceptable Macronutrient Distribution Ranges (AMDRs), which state the recommended percent of calories that adults should obtain from carbohydrates (45 to 65%), fat (20 to 35%), and protein (10 to 35%) (Figure: Acceptable Macronutrient Distribution Ranges).

**Principles of healthy eating patterns**

To support the five broad guidelines as well as the detailed recommendations discussed in this module,three principles of healthy eating patterns are provided by the *Dietary Guidelines for Americans.* These principles provide big-picture guidance for the diet without addressing specific nutrients

A group of numbers and text

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Oftentimes, clients will want to know which diet or eating pattern is *best*. This type of black-or-white thinking is reinforced by fad diets, sensational news headlines, and input from friends or family with limited understanding of nutrition. It is important to emphasize to your clients that there is more than one healthy way to eat and that their own preferences should play a role in determining how to implement a healthy eating pattern. It is better to encourage clients to make small sustainable changes to their eating pattern rather than recommend that they try to stick to an overly restrictive diet that they will probably not be able to follow long-term.

A poster of a dietary assessment

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**Components of healthy eating patterns**

The *Dietary Guidelines for Americans* generally emphasize the importance of overall eating patterns rather than focusing on specific nutrient recommendations like the DRIs. Nonetheless, there are several food groups or nutrients that are specifically emphasized (such as vegetables and fruits) while several others are intentionally limited (such as added sugars and fats).

Additionally, the recommendations to include or exclude certain types of foods should be followed within the context of a diet that contains an appropriate number of calories (Table: Estimated Calorie Needs From the *2015–2020* *Dietary Guidelines for Americans*). The guidelines provide estimated daily calorie needs based on age, sex, and physical-activity level.

Estimated Calorie Needs From the 2015–2020 Dietary Guidelines for Americans

| **MALES** | | | | **FEMALES** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Age** | **Sedentary** | **Moderately Active** | **Active** | **Age** | **Sedentary** | **Moderately Active** | **Active** |
| 18 | 2400 | 2800 | 3200 | 18 | 1800 | 2000 | 2400 |
| 19–20 | 2600 | 2800 | 3000 | 19–20 | 2000 | 2200 | 2400 |
| 21–25 | 2400 | 2800 | 3000 | 21–25 | 2000 | 2200 | 2400 |
| 26–30 | 2400 | 2600 | 3000 | 26–30 | 1800 | 2000 | 2400 |
| 31–35 | 2400 | 2600 | 3000 | 31–35 | 1800 | 2000 | 2200 |
| 36–40 | 2400 | 2600 | 2800 | 36–40 | 1800 | 2000 | 2200 |
| 41–45 | 2200 | 2600 | 2800 | 41–45 | 1800 | 2000 | 2200 |
| 46–50 | 2200 | 2400 | 2800 | 46–50 | 1800 | 2000 | 2200 |
| 51–55 | 2200 | 2400 | 2800 | 51–55 | 1600 | 1800 | 2200 |
| 56–60 | 2200 | 2400 | 2800 | 56–60 | 1600 | 1800 | 2200 |
| 61–65 | 2000 | 2400 | 2600 | 61–65 | 1600 | 1800 | 2000 |
| 66–70 | 2000 | 2200 | 2600 | 66–70 | 1600 | 1800 | 2000 |
| 71–75 | 2000 | 2200 | 2600 | 71–75 | 1600 | 1800 | 2000 |
| 76 and up | 2000 | 2200 | 2400 | 76 and up | 1600 | 1800 | 2000 |

Critical!

Although generic calorie intake recommendations are provided in the *Dietary Guidelines for Americans*, these may not be applicable to many individual clients. Using the methods described in this module will allow you to tailor calorie intake recommendations to individual clients based on their body size and activity level.

Additionally, when working in Australia, Nutrition Coaches should consider this information for educational purposes only, and must always utilize the [ADG Eat for Health Calculator](https://www.eatforhealth.gov.au/eat-health-calculators) to determine caloric intake recommendations for clients.

The recommendations range from 1,600 to 2,400 calories/day for adult women and 2,000 to 3,000 calories/day for adult men (Figure: Recommended Calorie Range for Adult Men and Women). While the calorie limits may be useful to members of the general population, there are several reasons why these generic recommendations may not be best to use for individual clients, particularly active clients.

Firstly, the calorie intake recommendations do not take body size (e.g., height and weight) into account. Secondly, there are only three activity levels (sedentary, moderately active, and active) in the recommended calorie intakes. These activity levels do not distinguish between activity at work and activity during leisure time. Additionally, some very-active individuals and athletes will exceed the definition of *active* provided by the guidelines*,* which is “a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to activities of independent living.” For these reasons, it is recommended that individualized calorie intake recommendations be utilized with clients. These recommendations can be provided by laboratory testing or through the use of prediction equations.

A graph with numbers and lines

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One frequently used method of estimating calorie intake is to estimate a client’s resting metabolic rate (RMR) and then multiply this number by an activity factor to get an estimate of the individual client’s daily calorie needs for weight maintenance. Then, calories can be added or subtracted from this daily calorie intake in order to promote weight gain or weight loss, respectively.

Try This

While the *Dietary Guidelines for Americans* provides generic calorie intake recommendations based on sex, age, and approximate activity level, these recommendations do not account for other relevant factors such as body weight and height. A variety of equations have been developed to estimate metabolic rate based on important characteristics of an individual. The following is an example of resting metabolic rate (RMR) estimation as well as how this information can be used to prescribe a client’s calorie intake.

Mifflin-St Jeor Equation

RMR (kcal / day) = (9.99 X weight (kg)) + (6.25 X height (cm)) - (4.92 X age (y)) + (166 X Sex Factor) - 161

Where body weight is in kilograms, height is in centimeters, and sex factor = 1 for males and 0 for females.

Example

You are estimating the RMR of a 175-pound man who is 6 feet tall and 35 years old.

Start by converting the weight and height to the required metric units.

A black background with white text

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Now, you can complete the calculation:

RMR (kcal / day) = (9.99 X 79.5kg) + (6.25 X 182.9cm) - (4.92 X 35) + (166 X 1) - 161

RMR (kcal / day) = 1,770 kcal / day

The RMR represents an estimate of the calories that are used by this individual’s body simply to keep physiological processes running over the course of a day. Any physical activity or exercise would increase the number of calories used each day. A way to get a big picture of the physical-activity level of a participant is to multiply the RMR by an appropriate activity factor, as shown in the following table.

Physical Activity at Work/School and Physical Activity in Leisure Time\* Activity Factor

Very Light – Sitting at a desk for most of the day

* Very Light 1.4
* Light 1.5
* Moderate 1.6
* Active 1.7
* Very Active 1.8

Light – Industrial work, sales, or office work that involves light activities

* Very Light 1.5
* Light 1.6
* Moderate 1.7
* Active 1.8
* Very Active 2.0

Moderate - Cleaning, kitchen staff, delivering mail on foot, etc.

* Very Light 1.6
* Light 1.7
* Moderate 1.8
* Active 1.9
* Very Active 2.0

Heavy - Heavy industrial work, construction work, or farming.

* Very Light 1.7
* Light 1.8
* Moderate 1.9
* Active 2.1
* Very Active 2.3

*\**Definitions: very light (almost no activity at all), light (walking, non-strenuous cycling or gardening approximately once a week), moderate (regular activity at least once a week, e.g., walking, bicycling or gardening), active (regular activities more than once a week, e.g., intense walking, bicycling or sports), very active (strenuous activities several times a week).

Try This

Practice calculating your own weight-maintenance energy needs. Use this method to compare your recommended weight-maintenance calorie needs to the generic recommendations shown in Estimated Calorie Needs from the prior *2015–2020 Dietary Guidelines for Americans* table.

**Foods to emphasize**

The *Dietary Guidelines for Americans* provides recommendations based on research demonstrating that certain food groups are associated with a reduced risk of chronic diseases and may help prevent some forms of cancer. Major food categories that are emphasized include vegetables, fruits, whole grains, low-fat or fat-free dairy, and protein foods. These recommendations can serve as a good starting point when evaluating the quality of clients’ diets and can help determine which practical recommendations to make to clients.

While some of these recommendations could lead to improvements in body weight or composition, it is important to remember that the goal of the *Dietary Guidelines for Americans* is to describe healthy diets that may help prevent diet-related chronic conditions.

Variety of vegetables

Vegetables are typically very nutrient-dense and are a critical part of a healthy-eating pattern. They provide many important nutrients, including fiber, water-soluble, and fat-soluble vitamins and minerals. Not only is vegetable consumption in general recommended, but it is advised that a variety of different types are consumed (Infographic: Vegetable Variety).

Eating vegetables from different categories will help ensure that an individual will obtain the full spectrum of beneficial nutrients found in this food category. Importantly, vegetables can be consumed in a variety of forms, including fresh, frozen, canned, dried, or cooked. However, lower-sodium forms of canned and frozen vegetables are recommended when fresh vegetables are not used.

It is important to limit the amount of butter or creamy sauces added to vegetables. Although the preparation of vegetables can increase their palatability, adding large number of calories from fat in order to make vegetables more appealing can be counterproductive to an individual’s overall health and wellness.

Fruits

Similar to vegetables, fruits provide fiber along with vitamins and minerals. While a variety of fruits can be part of a healthy eating pattern, it is recommended that at least half of fruit consumption comes from whole fruits rather than juices (Figure: Fruit vs. Juice). Although 100% fruit juice can contribute to meeting fruit intake goals, it does not provide the fiber found in whole fruits.

Many fruit juices may be less than 100% juice and contain large amounts of added sugars. Some dried fruit products also contain added sugar and may be easy to overeat due to their lower water content as compared to whole fruits. When canned fruit is chosen, the options with the lowest amount of added sugar should be chosen.

A close-up of a fruit and juice

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A green and white vertical banner with text and vegetables

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Grains

The *Dietary Guidelines for Americans* recommends that whole grains be included in a healthy eating pattern, while refined grains are limited. Whole-grain products include whole-wheat bread, whole-grain cereals and pastas, oatmeal, brown rice, and quinoa. Refined-grain products include most white breads, refined-grain cereals and pastas, and white rice. Refined-grain products are often enriched, meaning that nutrients that were lost during the refining of the grain are added back to the product (Figure: Whole, Refined, and Enriched Wheat). Often, B vitamins and iron are added to enriched products.

Some products contain whole grains but are not 100% whole grain. For example, a product label might state “made with whole grains,” even when the food only contains very-small amounts of whole grains. Some products will have stamps that specifically identify them as containing 100% whole grains or 50%+ whole grains. If the product does not have a stamp, looking for terms like “100% whole grain,” “whole wheat,” “brown rice,” or “oats” will give you an indication that it is a whole-grain product.

A chart of food content

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Dairy

Dairy products, such as milk, yogurt, and cheese, can help provide important nutrients. Dairy products are a good source of calcium, phosphorus, and a variety of other minerals. These minerals are essential for numerous aspects of physical well-being, notably bone health. Dairy proteins (i.e., whey and casein) are some of the highest-quality proteins in the food supply.

Many dairy products are also fortified with vitamin D because this vitamin enhances calcium absorption in the intestines. One potential downside to dairy is that frequently consuming full-fat dairy can potentially cause an individual to eat too many calories. For example, each 1-cup serving of full-fat (4 to 5%) Greek yogurt contains approximately 210 calories, including 11 grams of total fat and 8 grams of saturated fat. However, a 1-cup serving of fat-free Greek yogurt contains approximately 120 calories and no fat.

The guidelines recommend consuming low-fat or nonfat dairy to alleviate the concern of extra calories in full-fat dairy products. These products provide the beneficial nutrients found in dairy but are lower calorie per serving. Another important consideration when recommending dairy is that many within the population are lactose intolerant, meaning that they have insufficient quantities of the enzyme that breaks down lactose in the small intestine. When these individuals consume lactose, they typically feel bloated and uncomfortable and experience an upset stomach.

While some lactose-free dairy products and enzyme supplements are available, some individuals will choose to exclude dairy completely. In these cases, or for those who follow a plant-based diet, fortified soy products may be a suitable alternative due to their similar profile of nutrients. However, it is important to realize that some dairy substitutes do not possess all of the beneficial components of dairy.

For example, although soy milk provides a similar amount of protein when compared to dairy milk, almond milk provides substantially less protein. For clients who choose not to eat dairy, you can help them compare the nutrition of dairy-substitute products to actual dairy products in order to make the best substitutions.

Animal and plant protein sources

Both plant and animal proteins can contribute to overall protein intake. A wide range of protein sources are available: dairy, eggs, seafood, poultry, meat, soy products, nuts, seeds, and legumes. In addition to the protein they provide, these foods often contain good amounts of B vitamins and some minerals.

Consuming a variety of protein sources can be beneficial due to the different vitamins and minerals provided by each protein source. While all protein counts toward daily protein needs, animal proteins are typically higher-quality proteins than plant proteins.

Soy protein is the highest-quality, plant-based protein and exhibits a protein quality similar to many animal products. Protein quality is determined by a variety of factors, including the digestibility of the protein and how similar the pattern of amino acids in a protein source is to the pattern required by the human body

A screenshot of a cell phone

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A screenshot of a menu

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Saturated fats

Saturated fats are fats that contain a large proportion of saturated fatty acids (Figure: Fatty Acid Profiles of Common Fats and Oils). These fats are often solid at room temperature. Major sources of saturated fat include cheese, meat, and solid fats.

The guidelines recommend the intake of saturated fats to be less than 10% of the overall daily calorie intake and that saturated fats in the diet be replaced with unsaturated fats. The guidelinesalso state that the majority of Americans exceed this maximum recommended intake of saturated fats. Although saturated fats are used for some essential functions in the body, they can be produced within the body without consuming them in the diet.

The reason for the limitation of saturated fat intake is research demonstrating that replacing saturated fats with unsaturated fats lowers blood cholesterol and reduces risk of heart attacks and deaths related to heart disease (Hooper et al., 2015; Sacks et al., 2017). Because heart disease is the leading cause of death worldwide (World Health Organization), lifestyle changes that can reduce the risk of heart disease or death are of great public health importance. Overall, due to the widespread overconsumption of saturated fat and associations between overconsumption and heart disease, an evaluation of the saturated fat content of the diet may be appropriate for some clients.

Added sugar

Sugars, such as syrups and table sugar, are added to foods and drinks to increase their sweetness. However, added sugars typically do not provide additional nutrients. This means that foods with substantial amounts of added sugar often have low-nutrient density and high-energy density. Importantly, some sugars do occur naturally in nutrient-dense foods such as fruits and dairy.

The guidelinesemphasize the need to include these food groups while limiting foods in which sugar has been added in processing. This recommendation is due to the difference in nutrient density between foods like fruit or dairy and foods with added sugar (Infographic: Sugar Content Comparison – Processed Beverages). While fruits and dairy provide additional nutrients such as vitamins and minerals, foods with added sugars often have relatively low nutrient density. For this reason, the guidelines recommends consuming less than 10% of calories per day from added sugars as well as staying within recommended calorie limits.

As an example, a 16-ounce bottle of soda may have approximately 50 grams (200 calories) of added sugars. For someone who eats 2,000 calories per day, consuming this single bottle of soda accounts for 10% of daily calories and represents the maximal recommended quantity of added sugar for their intake level.

Foods with substantial amounts of added sugar are often very palatable, meaning that excessive quantities can be eaten very easily. Typically, individuals find it much easier to overeat foods with added sugars as compared to less-processed whole foods that contain sugar such as fruit. Because of this, it is important to increase the clients' awareness of whether they are susceptible to overindulging in foods with added sugars.

In addition to the likelihood that added sugars will contribute to excess calorie intake overall, the guidelines cite research demonstrating that eating patterns with high amounts of added sugar are associated with a greater risk of heart disease, obesity, diabetes, and some forms of cancer, which may be due to a cluster of unhealthy behaviors and increased adiposity due to increased caloric intake. For these reasons, increasing the clients’ awareness of their intake of added sugars can not only help with the goal of improving body composition but may also promote their long-term health and well-being.

Locate 10 different food items, either in your home or at the grocery store, and try to identify how much added sugar the products contain. The U.S. Food and Drug Administration (FDA) is now requiring that added sugars be included on nutrition facts labels. However, some companies have until the end of the year 2020 to comply with this regulation. Because of this, some food items may not explicitly state how much added sugar the product contains. In these cases, the total sugar content of the item can be examined alongside the ingredient list. Ingredients like sucrose, maltose, high fructose corn syrup, cane sugar, raw sugar, syrup, and honey indicate that sugar has been added to the product.

After evaluating your 10 food items, reflect on which items had more added sugar than you expected and which had less. Also consider what proportion of calories in each food item came from added sugars, keeping in mind that the *Dietary Guidelines for Americans* recommends that no more than 10% of total daily energy comes from added sugars.

A poster of a drink

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Sodium

Sodium is essential for many critical functions of the human body and is provided by many whole foods. However, the increased prevalence of processed foods has dramatically increased the sodium content of the food supply, primarily due to salt (sodium chloride) that is added to extend the shelf-life of processed foods and also to enhance their flavor. Higher intakes of sodium have been associated with increased blood pressure, one indicator of heart disease risk (Whelton et al., 2012; Institute of Medicine, 2014). However, there is some controversy regarding the effects of sodium intake on heart disease risk (Oparil, 2014).

Nonetheless, it is recommended that adults consume no more than 2,300 milligrams/day of sodium (Figure: Sodium in Table Salt). While the sodium content of specific foods varies, many items contain 1/3 to 1/2 of the recommended daily limit in a single serving. Foods like pizza (up to 1,000+ milligrams per slice), soup (about 700 milligrams/cup), deli sandwiches (about 1,000 milligrams per 6-inch sub), and dressings or sauces (up to about 1,000 milligrams per serving) are examples of foods that are high in sodium. However, there are also foods that may not seem particularly salty to a client but actually contain moderate amounts of sodium.

For example, a slice of bread may contain around 200 milligrams of sodium and condiments like ketchup may contain around 150 milligrams per tablespoon. If a client is trying to limit sodium intake, all foods and beverages should be carefully considered due to the prevalence of sodium in many different products.

A blue and white spoon with text

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Sodium is often included in sports drinks to help replace sodium lost in sweat, although the amount of sodium lost via sweat can vary substantially between individuals. While this may not be a concern for moderately active individuals, those who regularly perform long bouts of exercise and sweat substantially could potentially benefit from consuming sodium surrounding long-duration exercise to maintain electrolyte and fluid balance.

This is an example of a time when nutrition recommendations for public health take a different perspective than those for athletic performance. In fact, the *Dietary Guidelines for Americans* includes a note indicating that the stated sodium intake value “does not apply to highly active individuals” due to their increased amount of sweating. Although it is generally believed that the sodium needs of the majority of active individuals are met due to the prevalence of sodium in the food supply, be aware that some clients could need higher sodium intake. In particular, those who perform long-duration exercise and sweat substantially may need additional dietary sodium to replace losses due to sweating.

**Disparities between guidelines and intake**

One of the five guidelines provided by the *Dietary Guidelines for American*sis to “shift to healthier food and beverage choices.” This recommendation implies that current food and beverage intake in the United States is not aligned with a research-supported healthy eating pattern. The guidelines present data on the typical intakes in the United States, which is provided by a national food survey called *What We Eat in America*. This survey is jointly conducted by the HHS and USDA and given as part of the National Health and Nutrition Examination Survey (NHANES) (Table: What We Eat in America Survey Results Summary).

What We Eat in America Survey Results Summary

|  |
| --- |
| Based on recent data from this survey, the guidelinesemphasize the following concerns: |
| 1) About 3/4 of the population has an eating pattern that is low in vegetables, fruits, dairy, and oils. |
| 2) More than half of the population is meeting or exceeding total grain and protein foods recommendations but are not meeting the recommendations for the subgroups (i.e., whole grains and seafood) within each of these food groups. |
| 3) Most Americans exceed the recommendations for added sugars, saturated fats, and sodium. |
| 4) The eating patterns of many are too high in calories, as demonstrated by the high percentage of the population that is overweight or obese. |

Coach's Corner

Being aware of the general population’s dietary intake patterns can help you understand some of your clients better. However, it is important to remember that each individual client may differ from the eating patterns observed in the whole population. Performing dietary assessment, as described later in this module, can help you determine which shifts in eating patterns may be beneficial for a particular client.

The guidelines recommend a number of simple substitutions or shifts in order to combat the discrepancies between dietary recommendations and the actual intake of the general population. These include exchanging high-calorie snacks for nutrient-dense snacks, trading fruit products with added sugar for real fruit, shifting from refined grains to whole grains, replacing added sugars with unsalted snacks, trading butter for oils, and consuming no-sugar-added beverages instead of those with added sugars.

Because much of the population does not consume the recommended variety of foods within each food group, it is recommended that individuals broaden their intakes. For example, seafood intake is low in men and women of all ages. In order to promote the intake of a diverse spectrum of protein-containing foods, it is recommended that seafood (such as salmon or tuna) is utilized as a main protein source twice per week. However, not all seafood is created equal. It is important to understand the nutritional differences between wild and farmed seafood when educating your client on choosing seafood as a main protein source

A fish and barn with information

AI-generated content may be incorrect.

One of the reasons that seafood intake is generally low could be due to the fact that seafood is often more expensive that other protein sources like poultry or dairy. If your clients consume limited seafood due to price concerns, you could encourage your clients to look for sales on seafood items and then stock up, particularly when the seafood can be frozen and used later. However, it is important to realize that some clients may simply dislike seafood or may not be able to afford seafood on a regular basis. While recommendations provide goals to strive for, the importance of personal preferences and budget constraints should be considered.

**Questioning current guidelines**

It is important to recognize that the field of nutrition is relatively young and that much research is still needed to fully understand the impact of different eating patterns on health and well-being. Although the dietary recommendations presented by the *Dietary Guidelines for Americans* or other reputable sources are well-intentioned, they are not perfect and will likely change over time. Some recommendations have solid scientific backing but the evidence for other recommendations is limited.

A close-up of a brochure

AI-generated content may be incorrect.

Infographic: Nutritional Guideline Controversies highlights a few examples of current questions and/or controversies that exist today surrounding nutritional guidelines.

There are multiple levels of scientific evidence. For example, expert opinion is viewed as a relatively weak level of evidence and research studies in animals are viewed as weaker evidence than well-conducted studies in humans. The highest levels of evidence are achieved when the results from multiple well-conducted studies are combined in order to allow for stronger conclusions to be made. In nutrition research, many studies examine the association or correlation between intake of a certain nutrient and some aspect of health. While this type of research is useful for establishing a relationship between the diet and long-term health, it does not allow for determination of cause-and-effect relationships. Nutrition guidelines are produced from the available research but it is important to realize that nutrition is a relatively young scientific discipline and it is complicated to study. Ultimately, some dietary recommendations have stronger scientific support than others, and much more research is needed in a wide variety of nutritional areas.

While it is important to base nutrition practice on the best-available evidence, there are many questions in nutrition that have not been definitively answered. Additionally, there are many questions that have been answered for particular contexts, such as specific populations or age groups, but that have not been answered for all contexts. Understanding that the scientific process, the human body, and nutrition are complex will help you understand why answers to many common questions are not black-or-white. As a Nutrition Coach, it is important to realize that the nutrition guidance you provide your clients should be based on existing evidence but that the collective body of nutrition knowledge will grow over time and that recommendations may change because of this.

While the Infographic: Nutritional Guideline Controversies on the previous page is certainly not exhaustive, it demonstrates the point that the science of nutrition is a young and evolving field and better answers are being found as science progresses. Part of the scientific process is questioning current recommendations. The field of nutrition science will continue to explore the dietary factors that are most important for health and wellness.

As a Nutrition Coach, realize that many nutrition issues are not clear-cut and that recommendations may change over time. While staying up-to-date with current research is certainly recommended, helping your clients improve their health and wellness does not require you to know every detail of the current controversies in nutrition. Focusing on eating patterns that are feasible for your client, while also helping them move toward their health-and-fitness goals should be your first priority. Remain aware that recommendations can change and try not to hold to your views on nutrition dogmatically.

With that said, it is important to remember that the current nutrition guidelines are established based on substantial amounts of research and the interpretation of research by committees of experts. These recommendations should not be discounted even though it is well-recognized that they may be revised as additional information becomes available.

**Assessing dietary intake**

Performing a dietary assessment with clients is an important step in identifying eating-pattern changes that may help them reach their goals more effectively. Getting a picture of the client’s typical eating behaviours and food choices will help with understanding them better. This is a critical step in promoting the success of the client, because there is not a one-size-fits-all nutritional programme that works for every individual.

Although there are broad recommendations to promote a healthy eating pattern, as discussed in this chapter, there are many specific ways to implement these recommendations. Tailoring recommendations to each client individually will increase the likelihood that they will be able to make lasting dietary changes.

Understand that a client may be unintentionally providing you with a diet record (or other dietary assessment) that is not fully reflective of their lifestyle. For example, a client may present you with a day of a diet record that they feel is a *normal* day. However, the reality may be that they eat this way a couple days per week, but slip up and make poorer food choices on the other days. It is possible that these slip-ups could be stalling the client’s progress even though they may be unnoticed by the client.

If you suspect that your client’s dietary assessment may not be fully reflective of their habitual diet, try asking your client for information about their weekly routine. For example, you could ask if a dietary record they provided is how they eat every single day of the week or if they eat differently when they have social events, go out to eat, etc. You could ask the client to try to think about specific types of days (e.g. weekends) or situations (e.g. snacking in front of the TV) that may happen periodically, but were not apparent from their dietary assessment.

The goal of these conversations is to help increase your client’s awareness of their complete lifestyle and how it affects what they eat. Increased awareness of times when it is easy to make poor dietary choices may help your clients be on their guard for when these situations undoubtedly arise.

Before assessing the client's dietary intake, it is important to realise that there are limitations to nearly every method of dietary assessment. For example, some methods rely on the ability of the client to accurately remember the specific foods, and quantities of food, they ate at an earlier date. Additionally, some clients may intentionally or unintentionally change the way they eat when they are tracking their food intake so that their diet appears healthier than it is on a normal day.

What is more, many individuals vary a lot in what and how much they eat. For example, some individuals follow a fairly healthy and predictable eating routine during the week, but overeat at social occasions or weekend outings. This type of behaviour can sabotage fitness progress, but may not be apparent from looking at a few days of dietary assessment. Additionally, some individuals may either intentionally or unintentionally fail to record some food items they eat when completing a diet record. The coach might infer that the client is eating an appropriate number of calories for weight loss, or perhaps even eating a diet that is too low in calories. However, when tracking the client’s body weight over the course of weeks or months, it may not change or could even increase. This may give some indication that the initial diet record was either inaccurate or did not fully reflect the eating patterns of the client.

In these cases, it is important to have a conversation with the client to ensure they understand the procedures of the dietary assessment method and the importance of getting an accurate picture of their habitual diet. Do not accuse the client of dishonesty, but rather try to identify whether the client has eating patterns that were not completely captured by the assessment method so that appropriate recommendations can be made in the future. Ultimately, for the reasons mentioned here, it is important to interpret the results of dietary assessments cautiously.

**Methods of dietary assessment**

There are several common methods of dietary assessment that can provide an overall picture of a client’s diet as well as identify specific patterns that may need to be modified. While these methods vary in their approaches, each attempt to provide information about the client’s typical nutritional habits. Unfortunately, all existing dietary assessment methods have limitations.

Attention to detail and practise in using these assessment methods will help the Nutrition Coach know what to look for, as they continually improve their ability to understand and utilise the information obtained from these methods. The overall goal of employing these methods is to be able to provide clients with constructive feedback that helps promote their long-term health and well-being.

24-hour recall

The 24-hour recall is a simple interview in which a client describes everything they have had to eat or drink the previous 24 hours. Often, several specific steps are followed in order to help a client remember all foods and drinks consumed during this period. For example, the following steps are adapted from the National Health and Nutrition Examination Survey (NHANES) *Dietary Interviewer Procedures Manual:*

1. Quick list: Obtain a simple list of all food and drink items eaten within a 24-hour period of time without focussing on specific details and amounts.

2. Forgotten foods: Ask the client about specific food categories that may have been forgotten, such as non-alcoholic or alcoholic beverages, sweets/desserts and snacks. This may be particularly important for those who *graze*.

3. Time and occasion: Ask the client to think about his or her schedule during the 24-hour recall period and state what time foods were consumed. Remembering the activities of the day may help the client remember additional items.

4. Describe the food: Now that the list of foods/drinks has been compiled, ask the client to provide the following information for each food item: where the food was obtained (home, restaurant, etc.), brand/restaurant associated with the food, preparation method, how the food/drink was served (e.g. served with anything else) and the quantity of the food/drink.

5. Final review/probe: Briefly review the 24-hour recall for completeness with the client and ask one final time if there are any items that could have been forgotten.

Use Handout: 24-Hour Recall Worksheet as a tool with clients.

During the recall interview, it is important to give the client time to think and respond. If the client is rushed through the interview, they may be more likely to forget items. Although this method is relatively easy to use, it does rely on an individual’s accurate recollection of their intake. This may be particularly difficult when estimating portion sizes. Even if a client remembers everything he or she ate in the last 24 hours, it may be difficult to accurately describe the portion size.

Another limitation of this method is that evaluating a single 24-hour period may not give an accurate representation of a client’s overall diet. Because of this, it may be better to perform several 24-hour recalls in order to obtain more information. It may also be beneficial to perform assessments for both weekdays and weekend days, because many individuals eat differently on weekends.

Usual intake

Evaluating an individual’s usual intake can provide a big-picture look at their eating habits. This method can be used alone if high precision is not needed, or it can be used as a complement to a 24-hour recall or diet record in order to help determine if the days being assessed are similar to the client’s normal eating patterns.

The usual intake assessment consists of simply asking the client about their typical eating routines. Starting with the beginning of the day, clients should provide the Nutrition Coach with information regarding the frequency of eating, which food items are typically consumed, and the approximate quantity of each food item. This method can be useful for those who follow a very-regular eating pattern, but may be less useful for those with unpredictable eating habits. If this method is used, inquire about normal weekdays and weekend days.

The usual intake dietary assessment is most appropriate for those who follow very-predictable eating patterns. For example, those who prepare and portion all their meals for the week may be good candidates for this method. However, even those who meticulously plan all their meals for the week may indulge on weekends or at social events. Because of this, it is important to ask a client how often they deviate from the usual intake they described.

The frequency of eating different than their usual intake is only one potential concern. Another is how much they deviate from their usual intake. For example, if an individual indulges in two cookies once per week but otherwise follows a very predictable eating pattern, she or he may still be able to be assessed relatively accurately using the usual intake method. However, if an individual has one cheat day each weekend, in which they eat much differently than the usual intake they describe, this could be enough to make this assessment method inaccurate for this individual.

In these cases, another option would be to complete two usual intake assessments: one for a normal weekday and one for a normal weekend day. Ultimately, the usual intake method will not be suited for many clients, including those whose intakes vary considerably from day to day.

Diet record

Diet records are a common method of dietary assessment, particularly with the wide availability of mobile diet record apps. Diet records are essentially a list of all food items eaten within a specific period of time. The end result of a diet record may be relatively similar to a 24-hour recall, but the food items are added as the client consumes them. While this method was traditionally completed on paper, mobile apps provide a way to keep a digital diet record while also integrating dietary intake goals.

To increase the accuracy of a diet record, instruct the client to write down each food as soon as they prepare or eat it. Waiting until the end of the day and then trying to remember everything that was eaten, as well as the quantity eaten, will likely increase the error of this method.

Try This

Locate and download three different mobile diet-record apps. Use each one for a few days and identify what you like and dislike about each one. This will allow you to provide recommendations to your clients who may benefit from using this method.

Diet records have the potential to provide precise information on a client’s intake; however, similar to other methods, there can be substantial errors in diet records when a client either forgets to record items or is unable to accurately describe the type and amount of food eaten. One method that may increase the accuracy of a diet record is to have the client use a food scale.

Food scales can be purchased online inexpensively and they can help reduce errors in estimating quantities of food. When using diet records, a common recommendation is to have the client track 3 days (2 weekdays and 1 weekend day) over the course of a week in order to get a more complete picture of their intake. As in other methods of assessment, a challenge for obtaining accurate diet records is the client’s desire to appear healthy and avoid being criticised.

While this is not always the case, clients who feel this way may either consciously or unconsciously eat differently on days when they are tracking their diet, because they do not want to record bad foods that their fitness professional will see. Although this scenario may not be completely avoidable, encourage the clients to eat as normally as possible when tracking their diet so there is an accurate representation of their habitual patterns. Remind them that the purpose of this assessment is to help them and that having accurate information will help facilitate effective coaching.

Some mobile diet-record apps allow users to grant other individuals access to their digital-diet records. If your client uses one of these apps and is comfortable granting you access, this may be an easy way to periodically check in on their diet records. Some clients find it helpful to track food every day, but you can spot check the diet records so that you do not have to analyse every single day of their intake. Even knowing that their trainer/nutritionist can access their diet record at any time may help some individuals stay on track.

When encouraging clients to be open and honest when recording their diet, emphasise that your goal is to help them in a nonjudgmental way. Even if they know their diet needs to change, encourage them not to feel any pressure to make their diet appear *healthier* than it actually is. Remind them that the best way you can help them is if they provide you with the most accurate information they can.

Food Frequency Questionnaire

Food frequency questionnaires are designed to provide a big-picture view of the diet and allow for identification of intakes of particular food groups. These questionnaires often consist of a series of multiple choice questions designed to identify the frequency of consumption of major categories of food (i.e. grain products, vegetables, fruits, meats, poultry, seafood, dairy, fats/oils, sweets, etc.).

The Food Frequency Questionnaire used by the National Health and Nutrition Examination Survey (NHANES) is available [online](http://www.cdc.gov/nchs/data/nhanes/nhanes_03_04/tq_fpq_c.pdf). While this questionnaire contains 139 questions and may be more detailed than needed, reviewing this document may provide coaches with ideas for how to provide a simple food frequency questionnaire for their clients. Coaches can also complete this food frequency questionnaire themselves to gain a better understanding of this dietary assessment method.

Results from a food frequency questionnaire can be used to evaluate the similarity of a client’s intake of certain food groups and subgroups as compared to recommendations, such as those provided earlier in this module. Similar to assessing usual intake, the food frequency questionnaire can give a big-picture look at some dietary patterns, but will not provide precise information regarding the intake of particular nutrients.