

Nutrition

Overview

There are literally volumes of books dedicated to the topics of nutrition and weight control. A single chapter can only brush the surface of our understanding of nutrition, but the following pages should help provide you with appropriate guidelines to make healthy eating part of an active lifestyle.

A major issue facing most of us is how to make better choices in our daily intake of food and liquids. Think of one glass of water filled with our daily intake of calories and another glass filled with your daily output of calories through exercise and daily living. Simple enough. If you are at the perfect weight and body fat content, then you will strive to have the same amount of water in both glasses. For the vast majority of us trying to lose a few pounds, however, the goal is to have a larger glass for the output than for the input. (In reality, most of us enjoy more input than output.)

Many people become obsessed with the fat and oil contents of their food while neglecting to take note of the total number of calories consumed. Too many calories taken in, even from healthy foods like salads, breads and lean meats, still get converted to fat for storage, which is why exercise is so vital. The most important thing is a balance between the amount of exercise we get and the amount of food we consume. Intelligent choices in our food selections are what can really give us an advantage in weight management. More importantly, we must think of our total well-being rather than just management of our body weight.

The Scale

Do yourself a favor today and give your scale away, preferably to someone you don't like. A scale is one of the most useless things for us in managing our health. For the most part, it is only an accurate measure of how much water we have consumed and whether or not we are well hydrated.

Rather than using a scale to chart your progress, take some measurements of your chest, arms, thighs, calves, hips and waist. Mark them down and revisit the measurements every couple of months.

An even simpler way to see our body change is to get a tight pair of pants, one that you can just barely stuff yourself into, and mark them. Those pants will be your benchmark of fitness today and into the future. Once a week, try on the pants to see how they fit.

Alternately, for those of you who are brave and not particularly concerned about modesty, stand naked in front of a mirror. What you see today is the start point. Once a week, make your trip to the full-length mirror. I do suggest that this be done alone; the mirror can be blatantly honest, and this is not the time for critics.

Healthy Eating For The Long Run

Training for a marathon or half marathon can challenge your body beyond what you ever thought possible. The human body undergoes a multitude of very positive physical changes in response to endurance training. Blood volume expands to allow greater amounts of oxygen to reach body cells, muscle mass increases, and the body becomes adept at storing the fuel that will carry it to the end of the race. These changes allow you to finish your event "up-right and smiling." However, significant work is required on your part if you hope to reap these benefits. Consistent training, high-quality eating habits and obtaining adequate amounts of rest are all needed to lay the foundation that will support you during the many miles that lay ahead.

No two marathoners or half marathoners are alike! Despite this, long distance runners often share similar nutrition-related concerns and questions. "What does a good training diet look like?" "Should I be using sport drink?" and "What exactly do you do with gel?" are issues that all marathoners have faced. The good news is that crafting a well-balanced diet, like a really good, long run, is enjoyable and easy to do, provided you keep a few basic principles in mind.

Sports Nutrition Basics

Long distance runners, regardless of their experience or pace, are athletes in the truest sense of the word. Frequent, longer duration training sessions increase nutrient requirements. Responding to these heightened needs will help you maximize your training and strengthen your performance on race day.

Calories Count

Endurance training profoundly affects metabolism or the way the body uses energy (calories). Training for a marathon or half marathon involves hours of prolonged activity. The stress imposed by this kind of training dramatically increases a runner's need for energy. If this need is not met through a high-quality diet, chronic fatigue, rapid weight loss, and a decrease in physical performance can occur, making consistent training next to impossible.

Balance, variety and moderation are the keys to a sound training diet. This means that no one food or food group is over or under emphasized. In practical terms, a healthy training diet:

- Provides abundant amounts of whole grain products, vegetables and fruit
- Contains moderate amounts of protein and fat
- Limits (not eliminates) less nutritious foods, such as margarine, butter, higher-fat snack foods, sweets, alcohol and caffeinated beverages.

When you eat is almost as important as what you eat. A regular, consistent eating pattern is essential in terms of helping endurance athletes meet their calorie needs. Most marathoners and half marathoners need to eat at least three meals and three snacks each day to match the energy that they expend during training. Infrequent eating, skipping meals and chronic weight loss dieting can make getting enough calories very difficult. Avoiding these practices will enhance performance and allow you to make the most of your training runs.

Carbohydrates: Training Fuel

Carbohydrate is an essential nutrient that serves as the body's prime source of fuel during physical activity. In addition, carbohydrate is essential for utilizing or "burning" fat as a source of energy. Without adequate amounts of carbohydrate your body will be unable to draw on your fat stores to fuel your run.

In foods, carbohydrates are found in two forms: simple carbohydrates (sugars) and complex carbohydrates (starches). In the body, both forms are digested or broken down to give glucose, the sugar that fuels all of our cells. During activity, glucose circulating in our blood can be withdrawn for use as an immediate source of fuel. Endurance athletes can also store glucose in their muscles and liver in a complex form called glycogen. Glycogen functions much like a back-up or reserve fuel tank on a truck or motorcycle. During prolonged activity, the body can dip into its glycogen "tank" or stores for an added source of glucose.

Carbohydrate intake can make or break a long distance runner. When carbohydrate intake is marginal, glycogen is not stored in the amounts needed to support runs that last for more than an hour. As a result, endurance drops dramatically in runners who do not take in enough carbohydrate. This phenomenon, which sport nutritionists call "hitting the wall," can end even the best-trained athlete's dreams of glory. Depleting your glycogen stores has the same effect as a car running out of gas—things come to a halt. You cannot rebuild your glycogen stores during a long run or training session. Recognizing this, it's critically important that you take in enough carbohydrate on a daily basis. At least 55-65% of the energy (calories) in a distance runner's diet should come from this nutrient. Translated into food, this is a diet that contains approximately:

5 to 12 servings of grain products, where one serving equals:

- 1 slice of bread
- 30 g of cold cereal
- 175 ml ($\frac{3}{4}$ cup) hot cereal
- $\frac{1}{2}$ bagel, pita, or bun
- 125 ml ($\frac{1}{2}$ cup) cooked pasta or rice

Plus 5 to 10 servings of vegetables and fruit, where one serving equals:

- 1 medium-sized vegetable or fruit
- 125 ml ($\frac{1}{2}$ cup) fresh, frozen, or canned vegetables or fruit
- 250 ml (1 cup) salad
- 125 ml ($\frac{1}{2}$ cup) vegetable or fruit juice

Marathoners and half marathoners should aim for the middle to upper ends of these serving ranges in order to meet their heightened needs for carbohydrate.

Fluid Intake

Fluids: Wetter is Better! Water, like carbohydrate, is a critical nutrient for long distance runners to focus on. Unfortunately, water intake is often overlooked, a practice which can have disastrous results.

Water is essential for:

- Regulating body temperature
- Transporting glucose and other nutrients to cells
- Removing waste products.

All of these processes suffer when water intake is inadequate and dehydration can result. Dehydration or lack of body water is a very real concern that all runners need to be aware of. Left unchecked, dehydration curbs endurance and overall physical performance. In extreme cases, dehydration can be deadly.

Fluid Myths

Many myths exist about water and other fluids. For example, runners often mistakenly believe that you only need to drink when you are thirsty. This is not true. In fact, by the time you become thirsty you are usually already dehydrated. Many people also believe that you can treat dehydration while continuing to run. Again, this is more myth than fact. Treating dehydration involves taking in substantial amounts of fluid (e.g. 1 L or more) over a relatively short period of time. Most runners could not consume this much fluid and continue to run in comfort.

How Much Is Enough?

Endurance running dramatically increases your need for water and other fluids. You may have heard that you should take in 8 cups (2 L) of fluid each day for good health. However, what many people do not realize is that this recommendation describes the minimum amount of fluid required by an inactive person. It does not account for prolonged activity and is far too low to meet the needs of marathon and half marathon runners.

Significant amounts of body water can be lost during the course of a long run. Sweat losses of 500 ml (2 cups) of body water per hour are not unusual. These losses must be replaced or physical performance will drop off.

More is better when it comes to taking in enough fluids. Healthy, active people are unlikely to "over do it" with fluids, and concerns about "water overload" are largely unfounded. If you are not a "big drinker" you may need to focus on this aspect of nutrition for a while in order to change your behavior. Keep the following guidelines in mind to make sure that you are getting enough fluid:

- Drink regularly when you are not active sip 125 ml (½ cup) to 250 ml (1 cup) per waking hour of your day.
- Center some of your fluid intake around your runs or other activities.
- Drink 500 ml (2 cups) of fluid in the two-hour period before exercise.
- Take time out to drink 150 ml (⅔ cup) to 300 ml (1⅓ cups) of fluid every 20 minutes during exercise.

What Counts as Fluid?

In general, all decaffeinated, nonalcoholic beverages contribute to your daily fluid intake. This includes water, sparkling water, caffeine-free teas and coffee, fluid replacement sport drinks, juices and milk. Some liquids can actually promote dehydration. Use regular coffee and teas, caffeinated soft drinks and alcoholic beverages in moderation to avoid this effect.

Do I Need to Use Sport Drinks?

Sport drinks or fluid/electrolyte replacement beverages help to "top up" blood glucose levels. This, in turn, helps to preserve or "spare" your glycogen stores and promote endurance. Sport drinks also replace minerals like potassium and sodium that are lost during exercise. Research indicates that during prolonged activity (i.e. more than one hour of activity) these products may improve performance. Not all runners can tolerate sport drinks. Recognizing this, it is important to experiment with sport drinks during training to assess their impact on your individual performance. Never, ever try a sport drink on race day if you have not already tested it during training. And keep the following tips in mind when experimenting with these products:

- Choose a commercially prepared sport drink. Commercially prepared fluid replacement drinks contain carbohydrates, sodium and other minerals in amounts that are well absorbed and most likely to be tolerated. Steer clear of recipes for homemade sport drinks, which can be difficult to formulate to the specifications needed to maximize performance.
 - Following the manufacturer's directions when preparing sport drinks from a powdered mix. Add the exact amount of water specified on the label to prepare a drink that provides appropriate amounts of carbohydrates and minerals.
 - Drink small amounts at regular intervals. Consuming large volumes of sport drink in a relatively short period of time can promote bloating and abdominal cramping.
 - Keep it cool. Cool, rather than ice cold, fluids are easier to drink in the amounts needed to keep you well hydrated.
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How Can I Tell If I'm Getting Enough Fluid?

There are a number of simple things you can do to assess your fluid intake:

1. Check out your urine! Well-hydrated people produce urine in relatively large amounts and they urinate frequently. Examining the color of your urine can also give you an indication of your fluid status. If you are taking in enough fluid, your urine will be pale colored, similar to dilute lemonade.
 2. Weigh in before and after exercising. If you've lost an appreciable amount of weight during a workout it's not body fat. Instead, what you are seeing is fluid loss. Remember that a 0.5 kg (1 lb.) weight loss is roughly equal to 500 ml (2 cups) of water that have been lost and need replacing.
 3. Know the symptoms of dehydration. Dehydration is a continuum of physical symptoms that are quite subtle at first but progress in their intensity as more and more water leaves the body. Common signs of dehydration include thirst, headache, fatigue, irritability, chills and nausea. If you experience any of these symptoms during a run you need to stop and rehydrate.
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Losing Weight

Weight Management

More than one runner has entered a marathon or half marathon training program hoping to lose significant amounts of weight. Given the amount of training that is involved in marathon running, this sounds like it should be a relatively simple goal to achieve. However, what runners often do not realize is that weight loss requires dietary changes that can hamper performance and make their dream of completing a marathon or half marathon more challenging.

Weight loss is directly related to energy (calorie) intake. To lose weight you need to take in fewer calories each day than you are using through normal metabolism and daily activities. Unfortunately, cutting calories during periods of intense training can impair performance by reducing glycogen stores, altering immune function and slowing muscle recovery. With this in mind, you may be better off trying to trim down during your personal off-season, when training is moderate and rest is plentiful. If this is not possible, it's important to temper your goals and aim for very slow and gradual weight loss over a longer period of time.

Eating On The Run

Pre-Run Eating

"What should I eat before a run?" is a common question and one that can haunt you if you have incorrect information. Eating at the wrong time or choosing the wrong kind of foods can produce symptoms like nausea, vomiting and diarrhea, experiences that rarely make for a fun run!

Eating before activity, or pre-event eating as sport nutritionists refer it to, serves some very important purposes. A sound pre-event meal or snack can:

- enhance endurance
- prevent hunger and dehydration
- promote mental alertness.

Different people tolerate eating before activity differently, and experimentation is important for finding the exact combination of foods that works best for you. While some runners can happily down a breakfast of pancakes, sausages and coffee before a run, others may feel nauseous after eating only a granola bar and a glass of juice. Use your longer training runs to try out different foods and food combinations. Timing is critical in terms of pre-event eating. Foods need time to be digested in order to serve as a source of energy. Recognizing this, it's important to allow two to four hours between a moderately sized meal and the start of a workout. Smaller snacks or liquid "meals" can be consumed a little closer to the start of a run, perhaps as late as one hour before you hit the road.

For runners who enjoy training in the morning, a bedtime snack is critical. A nutritious snack, eaten just before bed, helps to keep blood glucose levels stable. This approach, coupled with a very light snack in the hour prior to a run, may help you sneak in a bit more sleep before you train.

Some foods offer greater benefits than others as pre-event meal choices. Foods rich in complex carbohydrates, such as breads, pasta, cereals or grains, are broken down quickly to provide the body with a source of glucose and are ideal choices before exercise. Fluids help to hydrate the body and should be part of all pre-event meals.

Some foods are not suitable for inclusion in a pre-event meal. Many people have difficulty tolerating the following kinds of foods, which should be eaten with caution before activity:

- High sugar foods: honey, regular soft drinks, syrups, candy and table sugars. These foods can cause abdominal cramping and diarrhea.
- High fiber foods: bran cereals and muffins, legumes (e.g. beans, peas, lentils) and raw

vegetables. High fiber foods can produce bloating, gas and diarrhea.

- High fat or high protein foods: butter, margarine, salad dressings, peanut butter, hamburger, hot dogs, etc. Fat and protein take longer to digest than carbohydrate and are not a good source of quick fuel during exercise.

The Golden Rule of Pre-Event Eating

Conquering the challenge of the marathon or half marathon distance is a thrill few runners ever forget. To make the most of this experience stick to eating foods that you have tried many times in training and that you know you tolerate well. The excitement of racing, when coupled with a food you can't tolerate, may place you in the awkward position of searching for a restroom (or bush) on the run. Never, ever eat something on race day that you haven't already tested several times during training.

Marathon Training

What to Eat...

By Susan Glen, M.Sc. Nutrition

For people running their first marathon, planning what to eat on the days leading up to the race and on race day can be almost more difficult than running the 42 km. Below I have outlined some guidelines for prerace eating.

One Week To Go

This is the time when you most dramatically taper your training (and probably go a little crazy in the meantime). Because you are decreasing your exercise time you don't need to increase your intake to prepare for the race. By maintaining your calories you will provide your body with the extra fuel it needs to prepare for the race. To optimize your glycogen stores in your muscles you may need to increase your carbohydrate intake slightly over this period. Aim for 65-70% of your calories to come from carbohydrates during this period. This intake of carbohydrates combined with the decrease in muscle glycogen utilization (from tapering) will ensure your glycogen stores are peaked for the race. It is important to remember that storing glycogen in your muscles requires water. For each gram of glycogen stored, 2-3 g of water must also be stored in your muscles. This brings us to the next important nutrition goal for the week prior to your marathon. HYDRATE, HYDRATE, HYDRATE! During the prerace week aim to take in 2-3 L of water a day and limit your intake of caffeine and alcohol, which can increase fluid losses. This will ensure your fluid levels are topped off for the race (to limit dehydration) and will give your body the fluid it needs to store glycogen in your muscles.

The Day Before

Don't eat any unusual foods the day before a race; stick with what you know. The last thing you need is to find out you don't agree with Aunt Margaret's borscht or the new restaurant down the street. After breakfast try to limit your intake of fiber. This is especially important for people who experience problems with cramps or diarrhea during long runs. By decreasing your fiber intake the day before you will decrease the amount of residue your intestines are dealing with. (It is important to make sure you have adequate fiber two days before to prevent constipation when you decrease your fiber). Plain pasta, white bagels and white rice usually work well for people who need to control their fiber intake the day before a race. As redundant as it sounds, remember to keep drinking water. Your water bottle should never leave your side the day before a marathon.

There is no need to eat a large meal the night before your race. The last thing you want to happen is to wake up still feeling full from supper. Eat a normal-sized, carbohydrate-rich meal

no less than 12 hours before start time (e.g. if your race starts at 7 am you should be finished supper by 7 pm the night before).

It's Race Day

What you eat the morning of the marathon will have little effect on your race. The most important thing to remember is that whatever it is, you should have tried it at least once in training. If you are sure that a yogurt smoothie is the right premarathon breakfast for you, make yourself one before some of your long runs and see how well you do. Knowing that you are eating something familiar that has gotten you through some of those 18-mi. training runs will help give you confidence for the race. Most people find that a small meal (200 to 400 calories) works best, but the key is finding out what works for you.

During the Race

As with everything on race day, you should be prepared well in advance. Make a plan for what you intend to eat and drink during the marathon and try it out in training. By taking in carbohydrates during the race you will help spare your muscle glycogen reserves and avoid "hitting the wall" (the same applies to your long training runs). Aim to take in 0.5 1.0 g of carbohydrate per kilogram of your body weight each hour. This can be in any form: fluid, solid, gel or a combination of all three. The trick is to find out what works for you. To avoid dehydration you should take in 0.5 1 cup of water or diluted sports drink every 15 minutes, starting 5 minutes into your run. Don't wait until you're thirsty. The key to nutrition before and during a marathon is preparation. By making a plan and trying it out in training you can be sure that come race day you will be ready to run and keep on running.

Weight Loss

What Works for Weight Loss?

To look at the plethora of magazine articles, diet books and web sites, you might think that there isn't anything that works as far as longterm weight management is concerned. In fact, just the opposite is true. Registered dietitians and nutrition researchers have a very clear picture of the approaches that best support weight loss, as well as those that don't:

- Begin by rethinking your focus. View weight loss as one, small part of a larger plan to "retrain" your overall lifestyle. Focus on developing healthy eating habits rather than dieting restrictively to drop a few pounds quickly. Remind yourself that learning new habits is difficult, and expect to experience periods of frustration along the way.
- Be realistic. Aim for a goal weight that is ideal for you. This may not be the same as your "ideal" weight from a chart or your lowest adult weight. Instead, a realistic goal weight is one that you can maintain without resorting to constant dieting or extreme exercise programs. It is a weight that allows you to fully enjoy the activities of daily life and that gives you a sense of well-being.
- Keep moving! Exercise plays a critical role in weight loss and long-term weight maintenance. Traditional weight loss diets frequently ignore the important link between exercise and weight maintenance. Without regular exercise, dieters tend to lose some muscle tissue along with any body fat that is lost. Loss of muscle tissue tends to slow metabolism (the rate that you burn calories). As a result, inactive dieters are much more likely to regain any weight that they have lost when they abandon their diet and return to a less restrictive way of eating. Regular exercise can help to prevent this situation from occurring.
- Be wary of fad diets. Fad diets are everywhere, and despite their compelling marketing these kinds of eating plans rarely lead to long-term weight loss. Most cannot verify the miraculous results that they promise and some are potentially quite harmful. In general, unsound weight loss plans:
 - Promise rapid or dramatic results.
 - Restrict one or more foods or food groups.
 - Promote so-called "miracle" products, supplements or food choices.
 - Encourage bizarre eating patterns or food combinations.
 - Suggest that their approach is painless and easy.

- Focus on eating for health instead of dieting. Traditional weight loss diets are often nutritionally imbalanced, overly restrictive and woefully unsuccessful. As a result, most people cannot stick with this kind of eating pattern long-term, and achieving a healthy weight becomes impossible. Aim for a nutrient-rich eating style, based on Canada's Food Guide to Healthy Eating, that is low enough in calories to promote gradual, healthy weight loss.

- Opt for small changes instead of a complete lifestyle "renovation." Changing behavior takes work, and building new eating habits or creating an active lifestyle are no exceptions. However, you can make things much easier if you phase in change slowly over time. Research shows that people adapt best to small changes rather than complete lifestyle "renovations." Recognizing this, don't aim to change your eating habits overnight. Focus on revamping one meal or one food choice at a time, letting yourself become comfortable with your new approach before adding anything new.

Nutrients During the Run

Eating during a run is a strategy designed to keep blood sugar or glucose levels high and promote endurance. Research shows that athletes who consume carbohydrate-rich foods or beverages during prolonged activity benefit from enhanced performance.

A wide variety of foods and drinks are available to provide long distance runners with the carbohydrates needed to keep blood glucose levels within the normal range. Sport drinks, gels or "gu," energy bars and even dried fruits are all items that you can use to "top up" your carbohydrate stores during a run.

Like the ideal pre-event meal, the definition of a perfect "on the run" snack varies from runner to runner. Keep the following points in mind as you look for foods to eat during activity:

Portability is important. Ideal on the run food choices are nonperishable, lightweight and easily contained.

Taste matters! Most runners will need to take in between 30 g and 60 g of carbohydrate per hour to keep blood glucose levels in the normal range during activity. Translated into food or beverage choices this equals:

- 1 to 2 packages of sport gel
- 1 sport bar
- 500 ml (2 cups) of sport drink
- 60 80 ml ($\frac{1}{4}$ $\frac{3}{8}$ cup) raisins

Unless you enjoy the taste, taking in the recommended amounts of these foods or beverages will be a challenge.

Experiment. The ability to tolerate sport gels, bars and drinks is highly individual. While some runners swear by these products, others are unable to tolerate even small amounts. Discover what works best for you by experimenting with a variety of carbohydrate-rich snacks during your long training runs.

Recovery Eating

Marathon running is intensive, and after a long run or race the body needs to be refueled. Eating well after exercise can help to speed your recovery and allow you to train at a consistently high level.

Keep the carbs coming! The body is primed to replace its glycogen stores following a long or rigorous bout of exercise. Make the most of this situation by choosing carbohydrate-rich foods and drinks immediately after finishing a workout. Continue to snack on foods like bagels, muffins, cereal and milk, fruits and fruit juices for several hours to fully restore muscle glycogen.

Keep up the fluids! Continuing to take in plenty of fluids after exercise helps to combat dehydration by replacing water that was lost from your body during exercise.
