LA Marathon Nutrition Manual

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HYDRATION
"The Propeller"

Water is vital for your health and vitality. The average human body is 60-70% water and without a constant consumption of fluid a person could become severely dehydrated if not deceased in 3-4 days. When training for a marathon, it is imperative that you keep your body fully hydrated at all times in order to maintain a healthy stamina, keen mind and optimal performance.

Water carries out a number of important functions with in the human body. One of the many functions is **body temperature regulation**. When body temperature starts to rise, sweat glands secrete sweat, which is 99% water. As the sweat evaporates, heat is removed from the body and the body is maintained at a normal temperature. While water is lost through perspiration, so are important minerals in the body such as Sodium, Calcium, Magnesium and Potassium. These electrolytes can be replenished by drinking more fluid in combination with electro-mix to ensure your body has the necessary vitamins and water level to keep at optimal performance.

In addition to temperature regulation, water also provides **lubrication of the joints**. Training and participating in a marathon can put a great amount of stress on ligaments and can often times result in pain and/or soreness. By increasing your intake of water, you can prevent injury to yourself.

Water is also a major component in the body's **transportation of energy and nutrients**. Your blood is 90% water and is responsible for carrying nutrients, oxygen, glucose and fats to various tissues and cells. Waste products are also carried out by means of fluids. **Proper digestive function** is relatively based on the amount of liquid you have coming into your body. The liver's primary function is to metabolize stored fat into energy. Toxins, wastes, and salts are cleaned out by the kidneys. If dehydrated, kidneys and the liver must work overtime to compensate, leaving you with low energy and poor performance. Make sure you keep your body clean and finely tuned with a substantial amount of water intake. **American Medical Association (AMA) recommends that you drink at least 8 ounces of water 8 times a day for the average person, so a marathon runner needs to consume 0.5 oz to 1 oz per pound of body weight to compensate for water loss.**

Athletes and marathoners can regularly experience **dehydration**. What's misleading about hydration is that there are often no warning signs or symptoms are mistaken. Thirst may not always be a precursor, fatigue can be mistaken for tiredness and sweat loss is often underestimated. This can result in severe cardiovascular stress, limited blood supply, negative physiological effects and heat stroke. To make sure you are consuming enough water drink regularly throughout the day. Downing a bottle before training is not going to cut it. Water needs to be replenished every 30-60 minutes during work out and consumed before and after training.

SOURCES: Water can be obtained from the foods we eat and fluids we drink. It is always better to drink pure water rather than juices, tea, coffee, sodas. These sources will actually cause you to become more water deficient as most of the products contain caffeine, which is a diuretic and actually increases your excretion of water. Fruit and vegetables also contain some levels of water. Sports drinks are fine, but some people prefer a 50/50 mixture of water with sports drinks. This will ensure you aren't over hydrating and not ingesting too much sugar at the same time.

CARBOHYDRATES
"The Furnace"

Carbohydrates are going to be your lifeline during training and during the race. They are the fueling system by which our bodies are energized and will prevent you from "crashing" if you utilize them correctly. There are two types of carbohydrates: **Simple and Complex**. It is important to understand the difference between the two and why you want to use a combination of both.

Carbohydrates are our bodies' quickest source of energy. Upon consumption, carbohydrates are broken down into smaller sugars and converted into ATP– energy that is instantaneously available to working muscles. Since carbohydrates are our bodies' primary source of energy, they can become depleted rather rapidly. Most runners believe that a carb is a carb. Not so. Carbs are not created equal and it is for this reason that you want to be careful when consuming both. **Simple carbohydrates** are fruits, juices and foods that are processed products that contain refined sugars and few essential vitamins and minerals. Because they are simple in structure, they are broken down quickly and therefore leave you with hunger sensations shortly after consumption. You will express a sudden burst of power but find your energy suddenly reduced due to lack of substance intake. **Complex carbohydrates** are grown in nature and are packed with fiber, vitamins and minerals and filter through your system more slowly. They tend to keep your blood glucose level at a constant, giving you a steady supply of energy. In effect this will allow you to maintain your training runs for longer periods of time.

SOURCES: BEST: *yams, corn, artichokes, potatoes, rice, seeds, legumes, vegetables, peas, beans*
NEXT BEST: *whole grain foods, cereal, bread, pasta, fruit, honey, dairy*
LEAST: *fruit juice, table sugar, soft drinks, candies*

HOW MUCH TO CONSUME: A marathon runner in training should consumer a diet that is composed of 50% carbohydrates, 30% protein and 20% fat. This percentage would be 0.5-1.5 grams per pound of body weight. 4 weeks prior to the race your diet should alter to be 60% carbohydrates, 20% protein and 20% fat – 1.5-3.0 grams per pound of body weight. The body stores 40% more glycogen when glucose storage is empty. Carb depletion goes on for three days into your last week, followed by a 3 day loading process. You don't want to put on extra pounds before your race. Carb-loading will be discussed in the later section "One Week From Race Day."

WHEN TO CONSUME: As stated, carbohydrates should be the center of all your meals. Snacks should also be simple carbohydrate based accompanied by a serving of fat (9-10 grams) i.e. 12 almonds and an apple. Fat regulates insulin levels. Complex carbs are recommended before training, used sparingly during training and after exercise to promote long term energy.

PROTEIN
"The Builder"

Protein is your source of strength. Carbs provide you with the energy and stamina you need and now you have to have the muscles to expend that energy. **Proteins** support your body in its repair of damaged muscle tissue that has been broken down during physical activity (catabolism). It is a nutrient that is not stored in your body so a regular intake is necessary to aid your body in muscular strength and endurance. Regular physical training tends to increase the amount of muscle breakdown and protein loss from the body, but protein is always needed to

enhance recovery and muscle build-up. KEEP IN MIND THAT PROTEIN IS YOUR LAST SOURCE OF ENERGY. Your body consumes muscle tissue as a source of energy when none is present.

SOURCES: BEST: *lean meats, fish, chicken, cheese, yogurt, beans, tofu, eggs, whey protein*, *soy protein*
NEXT BEST: *incomplete proteins like vegetables, nuts, beans, legumes*
LEAST: *protein bars*, *liquid canned proteins*

HOW MUCH TO CONSUME: Protein should contribute 20-35% of total calories per day depending on mileage. To calculate the number of grams of protein you should consume per day, multiply your weight in pounds by 0.5-1.0 for females and 1.0 – 2.0 for males.

WHEN TO CONSUME: For the most part protein should be a part of every meal. For those who train in the morning, protein should not be used but rather substituted by a complex carb, fat and simple sugar breakfast. No protein or little amounts should be taken before a workout. Protein takes too long to digest and may affect your performance during your training and race day. The best time to consume protein is after training, when your muscles are in need of repair**. Whey Protein** is a good source to get into your muscles quickly and efficiently. Try to consume within 15-20 minutes after exercise. Be leery of additives that many manufactures add to their protein powders.

FAT
"The Regulator"

Although carbs provide a quick energy fix and will help you the majority of the way, it is your fat that will carry you through the 26.2 miles. **Fat is a stored nutrient**, which means that the body burns other nutrients before it digs away at its reserves. Fat gives 13.5 times more ATP per gram than carbs do! Once your carbs are down to a minimum, your body has to burn through glycogen and continues to burn its fat storage to enable you to perform at a longer, albeit usually slower, endurance level. Take your body weight and multiply by 0.2-0.5 to get the proper amount of fat in your daily intake.

The importance of fat in your diet can not be underestimated. The human body uses Omega-3 and other fatty acids to perform vital functions in the body. Fatty acids help support cholesterol metabolism, regulate visual and nerve function, promote skin and hair health, and form hormone-like substances that are involved in inflammation and pain.

Our bodies cannot produce the fatty acids we need so it is very important to include them in our diet. These necessary fats are best found in natural foods. Man-made fats are high in saturated and trans fats, which can cause an increase in cholesterol and weight gain. If you are looking to lose a couple pounds during training, do NOT neglect your fats. By turning to a "low-fat" diet you will most likely fall victim to eating products that are high in sugar, calories and refined carbohydrates.

SOURCES: BEST: *nuts, avocado, olives, soybeans, flax seed, nut butters, sunflower & pumpkin seeds*
NEXT BEST: *nut butters, some oils (flax seed, olive, canola, sunflower, fish, coconut)*
LEAST: *packaged foods, baked goods, margarine, fast food, mayonnaise, creamy salad dressings, palm and peanut oil*

Remember that trans and saturated fat can contribute to weight gain and heart disease.

MEAL TIMING
"The Fuel"

During your weeks of training, your body will constantly need to be replenished so it is important to develop a consistent healthy pattern of eating. All meals should be prepared with the guidelines established of 50% carbohydrate, 30% protein, 20% fat. Breakfast should be your most important meal of the day, don't skip it. Lunch should not be meager and dinner should not be your biggest meal of the day. Balance your meals and **always eat a snack in between mealtimes**. If you don't eat a snack you cause instability in your glucose levels, causing you to consume larger portions the next time you sit down for a meal. Most of my clients say they don't have time for a snack as they are on the go. Take a New Performance Energy bar that is 100% organic and will provide you with the energy you need to carry on your day. 12 nuts and a piece of fruit are also great in between snacks.

Eating before exercise: 60 minutes before you start training consume a carbohydrate snack (15-20 grams) with a serving of fat (9-10 grams)

Eating during exercise: Carbohydrate intake during exercise improves performance when distances go over 13-15 miles. Everyone is different but use of powders, gels and bars is fairly typical for today's athletes and can help tremendously as long as it's not in excess.

It is optimal to eat after exercise: Repair your muscle tissue with protein and a small amount of carbohydrate within 15 min of exercising if possible to refuel glycogen storage (that's the highest bioavailability into the muscle cell). Within 2 hours one should have a full balanced meal and plenty of fluids.

FATIGUE
"The Breakdown"

Fatigue during periods of heavy training is common. It is frequently related to your food intake. The following might help restore your loss of energy:

Are you tired due to low blood sugar? This could be true if you skip meals, especially breakfast or lunch. You also might not be eating enough prior to your extended workout. To resolve, make sure you are getting 3 meals a day plus snacks, 50% carbohydrates and enough protein for muscle tissue repair. Fluids are key. Remember our rule of thumb – 0.5 - 1.0 ounces per pound of body weight.

Are you glycogen depleted? This is common with runners who are trying to lose weight or reduce calories. This is also a symptom for those who are not eating or drinking enough carb food or drinks 3 days prior to long (13 mile +) runs. Solution: Distance runners require 1.0-3.0 grams of carbohydrate per pound of body weight per day.

Are you protein or nutrient deficient? Quite frankly it's been the school of thought for many years that runners and endurance athletes can over-carb consistently and its ok due to the amount of exercise they put in when in fact you could be slowing yourself down with unwanted body fat. Inexperienced runners especially need to concentrate on not allowing yourself to eat anything just because you are training for the marathon. Fueling your body properly will help you in all facets of your training, weight loss and energy levels. It is easy for runners to neglect their protein needs. Make sure you are consuming appropriate amounts of protein per day (0.5g -1.0

grams per pound of body weight for females and 0.5g-2.0 grams per pound of body weight for males) to ensure you get your requirement of vitamins and minerals. Make sure you are taking a good quality multi-vitamin. You also need to replenish your electrolytes. Don't make energy drinks your sole source of electrolytes as they contain an exuberant amount of sugar. These drinks and high sugar items have their place again with runs exceeding 13+ miles. Try not to drink performance drinks during your day, drink water!

MARATHON PREPARATION
One Week from Race Day

Alright, lets get all geared-up for the big day. This week will be different from your past weeks in training. Your training is going to be lighter, which means that your food portions are going to decrease slightly as well. Make sure that you maintain a high-carbohydrate, low-fat diet during the seven days before your big run. Don't forget to drink plenty of fluids – 0.5-1.0 once per pound of body weight this week and supplement with electrolyte, l-glutamine, d-ribose, magnesium malate and multi-vitamins. Keep your carbohydrate, protein and fat balance consistent with your training thus far.

Carbohydrate loading should begin 3 days prior to the race, NOT 7 days before. **Carb-loading is not for everyone** and you need to experiment with it many weeks prior to race day. It can be an uncomfortable feeling to be training with very low carbohydrate intake but remember the idea here is to deplete muscle glycogen completely. The proper way to successfully carbohydrate-load is to start off with a completely depleted muscular storage of glycogen. In a depleted stated the muscle tissue can hold 40% more glycogen when loading properly over a 72 hour or 3 day period. Carb-loading must be accompanied by high water intake in order for the muscle tissue and liver to successfully load the glycogen. If you are considering carb-loading please consult NPN, or a licensed professional.

Monday, Tuesday, Wednesday: Normal 30% carbohydrate, 50% protein, 20% fat – 30 min run

Thursday & Friday: 60% carbohydrate, 30% protein, 10% fat – only 30 min run Thursday and day off Friday.

Saturday: 60% carbohydrate, 30% Protein, 10% Fat – 10 minute run at marathon pace (easy walk, warm-up and cool down).

Sunday: RACE DAY! Eat a meal 2 hours before event or a snack one hour before depending on your tolerance level, drive and set-up time. Best thing to do here is have a complex carb with a fat. You don't need protein here. Protein is not an energy source and it will just bog your digestive system down.

The 24 hours before the run are crucial. The worst thing you could do for your marathon preparation is have a huge gluten filled pasta meal with high fat foods i.e. garlic toast, meatballs, cream sauces the night before. You do not want the extra weight in your digestive track the next morning. If you have been eating a balanced diet the week prior then your muscles should already be properly loaded with glycogen and you are ready to go.

Two Days Before Race Day

On **Friday** make sure you are drinking at least 0.5 - 1 ounce per pound of body weight throughout your day and add two packs of electrolytes. Spread out your water consumption evenly and often so you aren't pounding it late in your day. This prevents frequent trips at night to the bathroom, which interrupts sleep. You need a good nights sleep; try to get a solid 8. Combine your water intake with 3 main meals and three snacks. Your total for the day should be

between 60-70% complex carbohydrates, making up the balance of calories with 20-30% protein and 10-20% fat. Snacks are just a serving of nuts (10 grams of fat) and a serving of fruit (15-20 grams of carbs). Don't try to eat huge dinner meals loaded with carbs. This creates TOO MUCH WASTE.

Saturday make sure you bump up your water to 1 ounce per pound. Your muscle tissue is 70% water and your total body water volume is 75%. Just do it!!! Add two packs of electrolytes to your day, again, to ensure you are ready for tomorrow. Today you should continue to eat 70% complex carbohydrates, spread out evenly. Let's use good complex carbs grown in nature i.e. brown rice, yams, sweet potatoes, lentils, beans, etc. Again, I strongly urge you not to load up on heavy gluten complex carbs. Set out your clothes, shoes and go to bed. You are ready.

Race Day

Race Day is here. Wake up and have a small snack if you are a super early riser. Otherwise remember what we said on Sunday morning, have between 1 cup - 2 cups of a cooked cereal (oatmeal, cream of rice, cream of wheat) depending on your size. Add in 2 tablespoons of your favorite nut butter and some more water. Try to eat 1-1.5 hours pre-race. Bring an energy bar just in case you get hungry before the race time. On the course there will be plenty of water stations and sports drinks sponsoring the marathon as well as energy bars. DO NOT TRY ANYTHING NEW ON RACE DAY! Stick to your routine.

During the Marathon

The first 10-13 miles, or two hours, which ever comes first, should be comfortable for you if you have done proper training. Naturally, you will break out in a sweat the first mile or so due to your increase in body temperature and rising heart rate. If you keep your heart rate steady your body will be utilizing fat and sugar combined. At some point, your body will quit using fat and glycogen storages will be tapped and become depleted. This is where using bars, sports drinks, recovery products, Gu and anything else that you may have brought with you will help you finish the race.

Never go out hard, no matter how good you feel. And here's why: at approximately mile 13 (everyone is different) your glycogen levels will be running low and your body will be switching away from burning fat and will utilize muscle tissue to keep you moving. Keep in mind that 10-13 miles, although a great distance, is only halfway through the race and your body has already used up a significant portion of its energy supply.

At about mile 18 runners sometimes **"**hit the wall." With all glycogen stores exhausted and fat cells being exploited to energize the body, the runner feels a deep impact physically and mentally. While this phase is painstaking, there are precautions that can be taken to best assure you that you will push past the Wall and easily make it to the finish:

1. Drink from your water bottle early and often during in the race. Have volunteers refill it for you.
2. If you don't have a water bottle, stop at every other water station or more
3. Take a bite of your food after the first 2 hours of running. Try to take in 150 – 200 calories per hour in the later miles
4. Prevent cramping by adding electrolytes to your water or use the course sponsored electrolyte drink
5. Keep running. You can do it! You're almost there!

After the Marathon

Congratulations! Now you need to provide your body with the proper recovery.

1. Hydrate – As soon as you cross the finish line, grab some water or sports drink
2. Take advantage of the orange slices, bananas, bagels and sports bars available
3. As soon as your stomach can tolerate food, start eating a meal high in carbohydrates and protein. You will crave saltier foods – go for it!
4. Continue to hydrate with fluids. If you plan on beer or wine as a celebratory drink, DON'T! Try to recover with your foods first and then celebrate
5. The key at first is to bump your blood sugar back up. Let's not worry about glycogen loading. Your body doesn't need glycogen at rest and recovery. You need protein to replenish the muscle tissue that you have sued for your 26.2 miles. This is where you should go out and eat a high protein meal with 25-30% carbohydrates and vegetables to continue your recovery.
6. Take an Epsom salt bath. Soaking your self using 2-3 quarts of Epsom. This instantaneously replenishes intestinal fluids and rehydrates you inside out. This also soothes those aching muscles.

TRAINING NUTRITION PROGRAM

Determine your caloric level based on your body weight. (These are always just guidelines and performing aerobic base and anaerobic threshold testing would give you extremely accurate information)

Body Weight	Caloric Level	Body Weight	Caloric Level
150	1750	110	1000
160	2000	120	1500
170	2500	130	1750
180	2750	140	2000
190	3000	150	2500
200	3750	160	2750

In calculating percentages of your carbohydrate, fat and protein along with your calories, remember that:
Fat = 9 calories/gram
Protein = 4 calories/gram
Carbs = 4 calories/gram

Example Female 110 lbs

0.5 Protein = 55 grams x 4 calories = 220 calories = 27.7%
0.3 Fat = 33 grams x 9 calories = 297 calories = 16.6 %
1.0 Carbs = 110 grams x 4 calories = 440 calories = 55.7%
198 grams 957 calories 100%

Example Male 200 lbs

1.5 Protein = 300 grams x 4 calories = 1200 calories = 37.5%
0.5 Fat = 100 grams x 9 calories = 900 calories = 12.5%
2.0 Carbs = 400 grams x 4 calories = 1600 calories = 50%
800 grams 3700 calories 100%

Please remember each person is different and your percentages will vary but these two examples will give you a very good idea on how to calculate your calories per day.

SUPPLEMENTATION
for Training and Racing

With your body operating at a high level of performance, you are going to need supplementation to help restore depleted vitamins, build-up muscle, prevent joint and ligament tension, ease soreness and recovery quickly. New Performance has a vast line of supplements to get you on the right track and help you cross the finish line. Visit us at NewPFC.com to place your order and receive 20% off first purchase and receive free shipping.

Multi-Vitamin
Restores all basic and necessary minerals to keep your body functioning at its best.

CalMagZinc
Calcium is the primary nutrient necessary for bone density. Magnesium and Zinc have proven to be very effective in muscle tissue relaxation and allow for better nutrient absorption.

D-Ribose Ribose provides every cell in the body with energy, an increase in endurance, and quick recovery.

ElectroMix
Contains nutritionally balanced essential electrolytes: Potassium, Magnesium, Calcium, Manganese, plus Chromium. Electro-mix is an ideal addition to virtually any beverage, providing the electrolytes the body needs.

Glucosamine Sulfate
Aids in the growth and strengthening of cartilage.

Hyaluronic Acid
Joint healer, provides cushion to joints, lubrication to valves.

Karbolyn Nitric Oxide Plus
Karbolyn was invented for the sole purpose of carbohydrate loading on the course. It was designed for Elite Athletes. Karbolyn is a fast, easy, convenient, safe and high performance way to load the muscle with accessible muscle energy (glycogen) during exercise.

Kre-Alkalyn
Kre-Alkalyn (creatine) helps the body gain optimum strength and creates more energy. It significantly improves performance during a workout, and enables faster muscle recovery after.

L-Carnitine
Aids in weight loss and improves energy. Liquid L-Carnitine is best because it is absorbed faster than by tablets and takes fat into the muscle cell for energy.

L-Glutamine
Glutamine is a nonessential amino acid that is the most abundant amino acid in the blood and muscle tissue, 61%. The most important function of L-Glutamine is the support of cellular growth, energy, and repair.

Whey Protein (very important)
Enhances muscle tissue repair, causing a positive effect on muscle mass and decrease in muscle breakdown. Extremely high bio-availability. Remember 15-20 minutes is optimal for absorption.