

Running Nutrition

Pre-, During & Post-Run Meals

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DOCUMENT STRUCTURE:

I have put this document together to help you with your nutrition goals. In order to get the most out of this document and begin make nutrition a lifestyle instead of a diet, I would suggest picking one goal at a time. Instead of trying to change your entire dietary lifestyle start with one thing and then branch out. For example, if you feel that your runs aren't going so well and you think it is your diet, then start with nailing down your pre-, during and post running nourishment. Keep track of the following: 1) which foods you ate prior (i.e. don't upset your stomach during a run), 2) which drinks/gels/supplements provide you with energy and no digestion issues during the run, and 3) what type of recovery meal allowed you to feel full and replenished post the run.

Once you have completed one goal, and if you so desire, you can move on to the next. This might be one of the following: 1) getting more protein into your meals, 2) having balanced meals throughout the day to stabilize your blood sugar, or, 3) cooking 'cleaner' and incorporating less processed and refined foods.

To help you achieve these goals I have provided an example of a menu I constructed for my mother who is not a runner (keep in mind the foods are tailored to her palate so if you are more adventurous and like to experiment, by all means incorporate as much nutritious variety you like!). Her menu provides some general guidelines to start 'cleaning-up' your nutrition. This is followed by a copy of her menu adjusted to fit in scheduled runs. Notice the pre- and post-run meals have been changed, but the rest of the menu is the same because ideally you want all your other meals to be balanced nutritionally with carbs, protein and fat, as well as balanced spatially. Lastly, there is a blank menu for you to print off or copy and use to help you achieve any of the above goals. Along with this chart I would recommend a food-log if you are doing any food eliminations to determine what works and what doesn't work for your digestion.

At the very end I have provided you with a chart of protein content in some foods as well as a grain chart to give you some suggestions on how to change things up; as well as a recipe to go along. Finally, you will find a summary of the most current findings from studies on exercise metabolism..

I hope the design of this package is useful to help you on your way to attaining your nutritional goals, but if you would like me to work with you individually please contact me to discuss a personalized menu plan.

Warmly,

Joyce Longfield

Mom's Menu

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast (within 30 min. of waking)	4 tbsp scoops of 1% cottage cheese with 2 tbsp scoops of homemade granola or ½ cp berries or pineapple	2 slices whole grain toast with natural nut butter (PB, almond, cashew)	4 tbsp scoops of Greek-style yogurt with a single individual container of fruit/vanilla flavored yogurt (NOT a non-fat)	2 eggs (hardboiled or scrambled) with 2 slices whole grain toast (no butter or margarine) and some grated cheddar cheese	4 tbsp scoops of 1% cottage cheese with 2 tbsp scoops of homemade granola or ½ cp berries or pineapple	1 whole grain bagel with natural nut butter	2 egg ommelette with veggies, 2 slices of reduced salt bacon (or 1 slice peameal/ham) and 2 slices whole grain toast (no butter or margarine, add cheese instead)
Snack (2 hrs after breakfast)	1/3 cp hummus with veggies	Yogurt cp with 1 tbsp scoop granola	2 squares homemade granola bars or homemade mini muffins	Apple slices with natural peanut butter	1/3 cp hummus with veggies	2 squares homemade granola bars or homemade mini muffins	1 large naval orange/apple/pear
Lunch (2 hrs after snack)	Chicken/tuna/salmon whole grain sandwich or wrap	Salad with oil and vinegar dressing, diced chicken/salmon/tuna, with 2 tbsp sprinkled cooked quinoa or brown rice (from leftovers)	1 whole grain pita with 1/3 cp hummus (stuffed with veggies or sliced in triangles)	Legume or lentil salad (from Tuesday night) with oil and vinegar dressing, herbs and veggies and feta	1 whole grain pita or 2 slices whole grain toast with 1 slice cheese and 2 slices oven roasted turkey breast	Salad with oil and vinegar dressing, diced chicken/salmon/tuna, with 2 tbsp sprinkled cooked quinoa or brown rice	Cold plate: cheeses, cooked chicken, veggies, fruit
Snack (2-3 hrs after lunch)	Apple slices or celery sticks with natural peanut butter	Flat bread with cheese slices	2 tbsp scoops of cottage cheese	1 large naval orange/apple/pear	You might not always feel like a snack at this time or may want to be mindful of your calorie intake if you know you are going to treat yourself at dinner time. If you are hungry, keep it light with some fibrous veggies to tide you over.		
Dinner (2 hrs after snack)	Brown rice or quinoa *seasoned, with chicken or fish (baked or BBQ with lemon, olive oil and herbs) and salad or steamed veggies	Fish and veggies with legumes or lentils	1 cp cooked pasta with tomatoe-meat sauce	Veggies and brown rice/quinoa sauté	Pizza night with beer or wine if like (2 glasses – have glass of water for every alcoholic drink)	BBQ or roast Beef or chicken with potatoes baked with olive oil and shallot (do not add butter) and salad – with wine if like	Pasta night (avoid cream sauce pastas) or swap with Saturday night's
Snack (optional)	You may not always want a snack but if you do, be mindful not to fall into the carb or sugar trap by having confections or crackers. If you really need some carbs, go for some sweet'n'salty popcorn. Otherwise, see if some cheese, hummus, or nut butter will do the trick. Typically if you are hungry after dinner is b/c you had too many carbs at dinner and not enough protein (or possibly fat); so provide your body what it NEEDS and not what your brain WANTS.				You will probably not have room for a snack but be tempted by dessert, so if you are, keep it minimal and be reasonable. If you go all out at dinner with food and wine, then rethink the dessert and coffee. But if you were moderate with dinner and avoided alcohol in order to have some dessert, then enjoy a normal serving; not two.		

Notes:

*seasoning could include mixture of herbs with sautéed onion, garlic, shallot – alternatively, you could add some homemade dressings such as a balsamic vinaigrette.

What you want to try to avoid is the packaged mixtures of rice (e.g. Knorr's or Uncle Bens) or the addition of bottled sauces. I have lots of homemade dressing recipes!

*tea – herbals are unlimited; black with milk, no more than 2x day (if need to have sugar with it, then just once a day)

*coffee – black or just milk, 2x per day; with cream & sugar, once per day

*Avoid sugary juices (OJ, cran, apple) and pop (EVEN DIET!!); if you want something carbonated opt for club soda with ice, lemon and lime – No Crystal light or any other drinks with ANY artificial sweeteners

***Protein! (Notice I gave this one 3 stars?? That is b/c it is worth it!) – Aim for a minimum of 8 g of protein for each of the meals. You don't need to have more than 30g in a meal as your body can't absorb more than 30g in one setting; so having an 8oz steak and chicken breast is too much! If you want both, have half of each. This is another good point to consider, don't save up your protein just for dinner time. It is better to have protein throughout the day. As well, try to get your protein from other sources instead of always animal. Incorporating plant proteins are a great alternative, and you can always use a tasty VEGA shake to get them in. These are my favourites:



Vega Shake & Go Smoothie is the perfect nutritious snack to grab on your way out the door, at the office or before your kid's big game.

- Two servings of veggies
- 2500 mg Omega-3-6-9
- 11 g complete protein
- Only 120 calories
- 1 billion probiotics cultures

Vega Shake & Go Smoothie is made exclusively from all natural plant-based whole foods. Alkaline-forming and easy to digest, it provides premium nutrition in a convenient, affordable, on-the-go format. Clean, green, and 65% organic and raw, Shake & Go Smoothie is free of common allergens including corn, dairy, gluten, soy, wheat and yeast. And it has only 6 grams of sugar!

Retrieved From (<http://myvega.com/products/vega-shake-and-go/features-benefits>)

*Select whole grains or stone-ground for your bread choices.

*Cook with healthy oils such as olive oil, canola, and safflower. Grape seed oil is great for making salad dressings and very healthy. Coconut oil is a good substitute for butter and a healthy saturated fat.

Adjusted for Running Schedule:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast (within 30 min. of waking)	4 tbsp scoops of 1% cottage cheese with 2 tbsp scoops of homemade granola or ½ cp berries or pineapple	2 slices whole grain toast with natural nut butter (PB, almond, cashew)	4 tbsp scoops of Greek-style yogurt with a single individual container of fruit/vanilla flavored yogurt (NOT a non-fat)	2 eggs (hardboiled or scrambled) with 2 slices whole grain toast (no butter or margarine) and some grated cheddar cheese	4 tbsp scoops of 1% cottage cheese with 2 tbsp scoops of homemade granola or ½ cp berries or pineapple	1 whole grain bagel with natural nut butter	1.5 hours before your run: Bowl of cereal (1/2 – ¾ cp), easy to digest fruit (grapefruit), toast with jam (PB might be too heavy), quick oats
Morning Run							LSD Run
Snack (2 hrs after breakfast)	1/3 cp hummus with veggies	Yogurt cp with 1 tbsp scoop granola	2 squares homemade granola bars or homemade mini muffins	Apple slices with natural peanut butter	1/3 cp hummus with veggies	2 squares homemade granola bars or homemade mini muffins	Recovery Meal: 4:1 ratio of carbs and protein – Ex. Bagel and 2 eggs or protein shake
Lunch (2 hrs after snack)	Chicken/tuna /salmon whole grain sandwich or wrap	Salad with oil and vinegar dressing, diced chicken/salmon /tuna, with 2 tbsp sprinkled cooked quinoa or brown rice (from leftovers)	1 whole grain pita with 1/3 cp hummus (stuffed with veggies or sliced in triangles)	Legume or lentil salad (from Tuesday night) with oil and vinegar dressing, herbs and veggies and feta	1 whole grain pita or 2 slices whole grain toast with 1 slice cheese and 2 slices oven roasted turkey breast	Salad with oil and vinegar dressing, diced chicken/salmon/tuna, with 2 tbsp sprinkled cooked quinoa or brown rice	Balanced Lunch: 50:25:25 (carbs:protein:fat) Ex. Sandwich with meat and cheese; 1 cp rice or pasta or quinoa with some form of protein (meat, dairy, nuts, legumes/lentils) and aim for healthy fats (fish, avocado, walnuts, olive oil)
Snack (2-3 hrs after lunch)	Apple slices or celery sticks with natural peanut butter	Depending on what you're your day starts you may not need a snack – Flat bread with cheese slices	2 tbsp scoops of cottage cheese	Depending on what you're your day starts you may not need a snack – 1 large naval orange/apple/pear	You might not always feel like a snack at this time or may want to be mindful of your calorie intake if you know you are going to treat yourself at dinner time. If you are hungry, keep it light with some fibrous veggies to tide you over.		
Dinner (2 hrs after snack)	Brown rice or quinoa *seasoned, with chicken or fish (baked or BBQ with lemon, olive oil and herbs) and salad or steamed veggies	No later than 4:30-5ish – Simple carbohydrates, little protein and fat (e.g. ½ cp: cereal, white rice/pasta, granola)	No later than 4 -4:30 – keep the pre-run meal consistent so not to run into digestion issues on clinic night – nothing fibrous	No later than 4:30-5ish – Alternatively you could opt for a pre-run sports drink such as the Vega Sport	Pizza night with beer or wine if like (2 glasses – have glass of water for every alcoholic drink)	BBQ or roast Beef or chicken with potatoes baked with olive oil and shallot (do not add butter) and salad – with wine if like	Pasta night (avoid cream sauce pastas) or swap with Saturday night's

Evening Run		7pm Clinic Run	6:30pm Recovery Run				
Recovery Run Meal	<p>Tuesday night post-run meals: -if you run with water only, have ready some carbs (30-60g depending on how hard you worked) -as the training gets more intense/longer, start to add in some protein (no more than 12-15g); this could be from a shake such as VEGA Shake and Go Smoothies or VEGA Sport Proteins which offer Branched amino acids – I often bring a shake as well as take an Emergen C drink or have an orange</p>		<p>Wednesday Night Post-Run Meals: -this run shouldn't be very long or intense so a VEGA Shake (of carbs and pro) will be perfect to get you home</p> <p>If you live close to where you run then try making this before you leave to have it waiting for you when you get in: -1/3 cp rolled oats -1 tbsp chia seeds (optional) -2/3 cp almond or rice milk -1 tsp VEGA Vanilla Almondilla Shake n Go Smoothie – you can eat as is or top it off with some frozen banana puree, YUM!</p>		<p>Pizza night with beer or wine if like (2 glasses – have glass of water for every alcoholic drink)</p>	<p>BBQ or roast Beef or chicken with potatoes baked with olive oil and shallot (do not add butter) and salad – with wine if like</p>	<p>Pasta night (avoid cream sauce pastas) or swap with Saturday night's</p>
Snack (optional)	<p>When you get home opt for a balanced snack of carbs and protein and some fat; if you are not allergic to nuts than a slice of whole grain bread with natural PB is a good choice to make you feel full before you go to bed. As long as you fueled properly after your run, then by the time you get home you should not feel the need to eat a large meal.</p>			<p>You will probably not have room for a snack but be tempted by dessert, so if you are, keep it minimal and be reasonable. If you go all out at dinner with food and wine, then rethink the dessert and coffee. But if you were moderate with dinner and avoided alcohol in order to have some dessert, then enjoy a normal serving; not two.</p>			

Suggestions for Pre-Run Foods:

Refined Carbs: I know what you are thinking..... those goes against all nutritional standards, but these foods are very easy on the stomach and provide your body with the right fuel for running. This is how I look at my pre-run meal, as a source of fuel. Processed white foods, like regular pasta, white rice, and plain bagels are good choices. Although they're not as nutritious as whole grain and unprocessed foods, they're easier on your stomach because the whole grain is already broken down. When nutrition is a lifestyle you can rest assured that the majority of your daily food consumption will make up for the lack of nutrition in this one meal.

Low-Fiber Fruits and Veggies: If you really want to eat fruits or vegetables before runs, zucchini, tomatoes, olives, grapes, and grapefruit are all low in fiber. Keep in mind that the natural sugar of fruits is fructose which like lactose can cause digestive issues. A study published in 2007 revealed that approximately 40% of the population in Western Countries had “Fructose Malabsorption” which can cause them to feel bloated or gassy, suffer from stomach pains, diarrhea or even vomiting. The interesting thing with this condition is that symptoms usually only occur when the food has a higher fructose to glucose ratio. These are examples of food with more fructose to glucose:

- Fruit — apple, pear, guava, honeydew melon, papaya, quince, star fruit, watermelon;
- Dried fruit - apple, currant, date, fig, pear, raisin, sultana;
- Fortified wines
- Foods containing added sugars, such as agave nectar, some corn syrups, and fruit juice concentrates.

Pay attention to if any of these foods cause you any discomfort after ingestion. If so, you may want to avoid them and opt for some of the following:

- Stone fruit: apricot, nectarine, peach, plum (caution - these fruits contain sorbitol*);
- Berry fruit: blueberry, blackberry, boysenberry, cranberry, raspberry, strawberry, loganberry;

- Citrus fruit: kumquat, grapefruit, lemon, lime, mandarin, orange, tangelo;
- Other fruits: ripe banana, jackfruit, kiwi fruit, passion fruit, pineapple, rhubarb, tamarillo.

*Sorbitol is another type of sugar often found in gum and candy, but is also found in some fruits and can cause diarrhea. Meaning, if you opt for gum to combat bad breath before you join your friends on a run, you may want to look for another option.

Since fructose does not have as high of GI impact as glucose, which means that it won't top up your blood sugar as quickly as a sports drink so you may want to consider this depending on how close you are to going for a run or when choosing a drink for your run.

Safe Dairy: Some people have issues when they consume dairy products before runs either due to the presence of lactose or the fact that the protein 'casein' can take a long time to breakdown. Soy, rice, and almond milks generally don't contain the sugar lactose. You can also try acidophilus milk (e.g. Kefir) and yogurts with live cultures, which contain bacteria that help with digestion.

Foods to Avoid:

- Fatty, fried, greasy, or spicy foods that can cause more problems and discomfort
- High-fiber foods that can be troublesome; bran and some cereals; raw fruits and vegetables
- Dried fruits, beans, popcorn, and nuts
- Chocolate, caffeine and sugary foods.

These foods either take too long to digest (fat, fiber, protein, raw), cause diarrhea (chocolate, caffeine) or induce nausea (sugary foods – spike Insulin and then crash making you light-headed and/or nauseous).

If you suffer from digestion issues you may want to experiment with some of these common ailments and see if any work for you:

- Pomegranate juice (used to relieve diarrhea)
- Blackberry and raspberry leaf tea can be drunk cold and have a binding effect on the mucous membranes of the intestines (also help reduce inflammation)
- Chamomile tea known to calm nerves and may reduce intestinal cramping
- Ginger root (tea or capsule) eliminates nausea and cramping

If you do suffer from the dreaded runners trots, you can help reduce bowel inflammation by taking any of the following after your run:

- Folic acid repairs damage to intestinal lining
- Apple cider vinegar – will also replenish potassium and magnesium stores
- A good probiotic (you may need to try a couple brands until you find the right one for you, but this is a good supplement to take on a daily basis as a preventative measure)

Blank to Print:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast (within 30 min. of waking)							<i>Pre-Run Meal, 1.5 hrs prior to run (simple carbs)</i>
Morning Run							LSD Run
Snack (2 hrs after breakfast)							<i>Recovery Run Meal (within 30 min – aim for 60g carbs, 15g pro)</i>
Lunch (2 hrs after snack)							
Snack (2- 3 hrs after lunch)							
Dinner (2 hrs after snack)		No later than 4:30-5ish – Simple carbs	No later than 4 -4:30 – Simple carbs	No later than 4:30-5ish – Simple carbs			
Evening Run		Clinic Run	Recovery Run	Training Run			
Recovery Run Meal or Evening Snack		<i>Training Run – will depend on how hard you worked – maybe 30-60g carbs, 5-15g pro</i>	<i>Recovery Run – will depend on how hard you worked – maybe 30-60g carbs, 5-15g pro</i>	<i>Training Run – will depend on how hard you worked – maybe 30-60g carbs, 5-15g pro</i>			

High Protein Foods List:

Animal Protein Foods	1 gram edible protein per 100g (3.5 oz) in weight	Plant and Dairy Protein Foods	1 gram edible protein per 100g (3.5 oz) in weight
Beef Topround, Lean	36.12g	Pumpkin Seeds	32.97g
Pork Bacon	35.73g	Peanut Butter	25.09g
Beef Brisket, Lean	33.26g	Cheddar Cheese	24.90g
Beef Steak, Lean	31.06g	Monterey Cheese	24.48g
Beef Top Sirloin, Lean	30.55g	Colby Cheese	23.76g
Pork Top Loin	30.48g	Peanuts	23.68g
Bluefin Tuna	29.91g	Mozzarella Cheese	22.17g
Turkey Bacon	29.60g	Almonds	22.09g
Chicken, Dark Meat	28.99g	Pistachio Nuts	21.35g
Oyster	28.81g	Flaxseed	19.50g
Beef Tenderloin, Lean	28.51g	Tofu	17.19g
Turkey, White Meat	28.48g	Oats	16.89g
Beef Kidney	27.27g	Egg Yolk	15.86g
Halibut	26.69g	Cashew Nuts	15.31g
Cooked Trout	26.63g	Hazelnuts	15.03g
Veal Cooked	25.93g	Walnuts	15.03g
Beef Liver	25.51g	Fried Egg	13.63g
Cooked Salmon	25.56g	Soybeans	13.10g
Goose	25.16g	Whey	12.93g
Caviar	24.60g	Cottage Cheese	12.49g
Lamb Cooked	24.52g	Ricotta Cheese	11.26g
Freshwater Bass	24.18g	Pecans	9.50g
Flounder	24.16g	Lentils	9.02g
Beef T-bone	24.05g	Wheat Bread	8.80g
Hamburger 80% lean	24.04g	Acorn Nuts	8.10g
Duck	23.48g	Lima Beans	7.80g
Turkey	23g	Macadamia Nuts	7.79g
Pork Chop	21.91g	Mungo Beans	7.54g
Turkey Gizzard	21.72g	Cranberrys	5.54g
Turkey Heart	21.47g	Green Peas	5.36g
Anchovy	20.35g	Pinto Beans	4.86g
Lobster	20.50g	Kidney Beans	4.83g
Shrimp moist heat	20.91g	Yogurt	3.47g
Turkey Liver	20.02g	Non-fat Milk	3.37g
Alaska King Crab	19.35g	Whole Milk	3.22g
Chicken, White Meat	16.79g	White Rice	2.69g
		Brown Rice	2.58g
		Fruits	~1g or less

Grain	Ready In	Benefits	Other Forms
Quinoa	15 min	Quinoa provides 63 percent of your Daily Value (DV) of manganese in just one cup. Look for red quinoa for an extra boost of antioxidants.	flakes, flour, pasta
Teff	20 min	This tiny Ethiopian grain, which can range from tan to deep purplish brown, has a mild molasses taste and is a good source of iron.	flour
Amaranth	25 min	The size of a poppy seed, amaranth contains more protein than most other grains. Try popping it like corn for a tasty snack.	flour
Millet	45 min	Fluffy when cooked, millet is excellent in pilafs. One cup supplies 25 percent of your DV for magnesium—crucial for energy metabolism.	cereal
Oats	50 min	Hearty-tasting oat "groats" (the whole oat kernel with just the outermost hull removed) are rich in cholesterol-lowering fiber.	flour
Rice	1hr, 15 min	Whole-grain brown, black, and even purple rice are rich in magnesium and iron, which is needed to help keep energy levels high.	flour, flakes, pasta
Barley	1hr	This is a high-fiber grain with a nutty taste. Soaking whole barley kernels overnight helps speed up the cooking process.	flour
Rye	1-1.5 hrs	Rye is a good source of selenium, which protects cells from damage caused by exercise. Soaking kernels overnight shortens cooking time.	flakes, flour
Kamut	1.5 hrs	An Egyptian grain that's becoming widely cultivated, kamut is about 30 percent higher in protein than more common wheat varieties.	flakes, flour, pasta
Wheat Berries	2 hrs	One-half cup of cooked whole-wheat berries packs 30 grams of glycogen-rebuilding carbs—or 10 percent of your DV.	

Summary from: <http://www.runnersworld.com/article/1,7120,s6-242-300--13845-0,00.html>

*Spelt is another wonderful grain which has less gluten and more protein than wheat. Spelt is available as flour, and like kamut flour both can replace whole wheat in a recipe. You can also find spelt pasta as you can rice and kamut. These pastas may take a bit longer to cook but are a great way to change up your diet from whole wheat. Another great way to change up your diet is swap you oatmeal for spelt, kamut, rye, rice or quinoa flakes. Try making some homemade granola with any of these flakes using the recipe below.

HOMEMADE GRANOLA

Dry

2 cups flakes (oats, spelt, kamut, rye, rice, quinoa)
 ½ - 1 tsp of your choice of spices (cinnamon, ginger)
 ¼ - ½ cp of your choice of additions (nuts, seeds, dried fruit, unsweetened flaked coconut)

Wet

1/3 cp juice (OJ or apple) or water – depends on how sweet you like your granola
 ¼ cp each honey and maple syrup
 2 tbsp light oil (canola, safflower, olive, grape seed)

Mix wet and dry ingredients in separate bowls and then combine; mix thoroughly. Spread mixture on large baking sheet and bake at 350oF for 10 min and toss. Bake for another 10 min and toss again. Then bake until desired golden colour. Allow to cool completely before storing in a container. Also freezes well.

These are the top 5 nutritional fallbacks among runners:

1. Not Drinking Enough
2. Not Consuming Enough Protein
3. Not Eating Properly before a workout
4. Not Getting enough Iron
5. Not Fueling properly after a workout

In order to help you tackle these or any other nutritional concerns you may have, I have provide you with the latest Scientific evidence with regards to the importance of maintaining proper nutrition during your training. The following information summarizes the most current (1995 to present) studies published on sports nutrition.

POSITION STATEMENT

It is the position of the American Dietetic Association, Dietitians of Canada and the American College of Sports Medicine that physical activity, athletic performance, and recovery from exercise are enhanced by optimal nutrition. These organizations recommend appropriate selection of food and fluids, timing of intake and supplement choices for optimal health and exercise performance.¹

THE FOLLOWING QUESTIONS WERE ADDRESSED IN THEIR REVIEW:

1. **WHAT IS THE RELATIONSHIP BETWEEN ENERGY BALANCE/IMBALANCE, BODY COMPOSITION, AND/OR WEIGHT MANAGEMENT AND ATHLETIC PERFORMANCE?**
 - Long-distance running utilizes the aerobic (oxidative) pathways mainly which uses the muscle and liver glycogen, blood glucose and adipose (fat) tissue triglycerides.
 - Approximately 50-60% of energy used during a 1-4 hr training at 70% effort is from carbohydrates and the remainder from free fatty acid oxidation.
 - Training doesn't alter the total amount of energy expended, but rather the proportion of energy derived from carbs and fat; aerobic training increases the energy taken from fat and decreases that from carbs; i.e. a trained individual will use more energy from fat than an untrained. **Long-chain fatty acids (these are your good fats) are the preferred fuel choice by your body.**
 - Persistent low energy intake (females: <1800-2000 cal/day, males: <2500cal/day) can lead to weight loss and disruption of endocrine function, compromise performance and negate the benefits of the training. Loss of lean tissue mass results in the loss of strength and endurance as wells as compromises the immune, endocrine and musculoskeletal function. **Make sure you are increasing your calories on the days your train appropriately!**
 - Body composition and body weight are two of the many factors to optimal exercise performance. Body weight can influence your speed, endurance and power where as body composition can affect an athlete's strength, and agility.
 - **Suggested Food intake:**
 - If weight loss is a goal, decrease your calories by no more than 10-20%, otherwise your performance may be compromised
 - Fat intake should not be decreased below 15% of daily total energy intake (25% is optimal)
 - Emphasize increased intake of whole grains and cereals and legumes
 - Five or more daily servings of fruits and veggies
 - Do not skimp on protein or calcium. Eg. Low-fat dairy, lean animal meat and plant-based proteins.
 - Water should be consumed throughout the day, before, during and after exercise.

- Don't skip meals (especially breakfast) and allow yourself to become overly hungry. Prepare yourself for time you might get hungry
- Do not deprive yourself of favourite foods or set unrealistic dietary rules. Dietary goals should be flexible and achievable.
- **You are making lifelong dietary changes to sustain a healthful weight and optimal nutritional status!**

- **The ratios:**

- **Carbs** – days you run, 3.2-3.6 g/lb of body weight (e.g. 140lb person would have 450-500g carbs), non-running days, 1.8-2.3 g/lb (e.g. 140lb person would have 250-325g carbs).
- **Protein** – ~25% of total calories is ideal, but no lower than 10% and no higher than 35%. **Additional protein is recommended on the days you run for optimal recovery and nitrogen balance from intense endurance training.** e.g. for a 140lb person this would range from 110g (non-training days) to 160g (training day).

*Note: you need the carbs with the protein as carbs are important to protein metabolism

- **Fat** – necessary component of a normal diet providing energy, nutrient absorption and is an essential element of cell membranes. Recommended range is 20-35% (10% saturated and 20% unsaturated). (e.g. for a 140lb person ~50-60g fat per day is ideal).

- **Recommended supplements:**

- B vitamins –two major functions directly related to exercise:
 - 1) Energy production during exercise
 - 2) Production of red blood cells, protein synthesis and in tissue repair
- Vitamin D – when not running outside take 2000UI/day
- **Antioxidants (Vitamin C & E, β -carotene and selenium)** – exercise can increase oxygen consumption by 10-15 times and long-term exercise can produce constant oxidative stress on the muscles and cells, although the well-trained athlete may have a more developed antioxidant system. A poor diet can cause lack of the necessary antioxidants. **Out of all of them, additional Vitamin C (100-1000mg) post-exercise is a good idea as it combats muscle inflammation. Vitamin C aids Iron absorption; try and incorporate raw Vitamin C-rich foods (as not to denature the vitamin through the cooking process – e.g. tomatoes, berries, oranges, and broccoli) with iron-rich foods in at least one meal a day. But there is one word of caution for runners when it comes to vitamin C, too much can cause diarrhea so if you suffer from digestion issues you may want to avoid vitamin C before a run.**
- **Minerals – Calcium** (obtain through food as much as possible instead of a supplement). **Iron** is the most prevalent nutrient deficiencies among athletes and can impair muscle function. **Under the direction of your doctor, the appropriate iron supplement can improve your work capacity, increase oxygen uptake, reduce heart rate and decrease lactate concentration during exercise.** **Zinc** plays a role in growth, building and repair of muscle tissue, energy production and immune status. Decreases in cardio-respiratory function, muscle strength and endurance have been noted with poor zinc intake. A balanced diet is preferred over a zinc supplement. **Magnesium** plays many roles in our bodies and a deficiency can impair endurance performance by increasing oxygen requirements. A magnesium tissue salt is ideal for combating muscle cramping and spasms.
- **Electrolytes** – the daily requirement for **sodium** intake is 1000 – 2000 mg per day, however athletes may need upward of 2000mg per day if they have normal blood pressure levels and are drinking plenty of water. A combination of sodium, potassium and chloride is preferred over sodium alone.

2. WHAT IS THE EVIDENCE TO SUPPORT A PARTICULAR MEAL TIMING, CALORIC INTAKE AND MACRONUTRIENT INTAKE FOR OPTIMAL ATHLETIC PERFORMANCE DURING TRAINING?

• **Pre-exercise meal:**

- Shown to improve performance
- Determined on an individual basis for athlete's gastrointestinal characteristics as well as the duration and intensity of the workout
- Guidelines: sufficient fluid needed, low in fat and fiber, high in carbs, moderate protein and familiar to athlete.
- Size and timing are interrelated – smaller meals closer to the event, larger meals when more time available.
- Glycemic value of the carbohydrate does not influence performance (but high GI foods tend to be easier to digest).

• **During exercise:**

- **Exercise lasting longer than 1hr, especially in the morning after an overnight fast, should consume carbohydrates (30-60g/h)!!!**
- Improved performance has been shown with carbohydrate ingestion shortly after onset of activity – consuming your carbs at 15-20 min intervals instead of after 1.5 – 2hrs is more beneficial. (e.g. use of sports drink)
- Carbohydrate source should primarily be from glucose or a mixture of glucose, fructose and maltodextrins. (fructose on its own is not as effective and may upset your stomach)
- Addition of protein during exercise is inconclusive at this time.

3. WHAT IS THE EVIDENCE TO SUPPORT A PARTICULAR MEAL TIMING, CALORIC INTAKE AND MACRONUTRIENT INTAKE FOR OPTIMAL ATHLETIC PERFORMANCE DURING COMPETITION DURING THE 24 HOURS PRIOR TO COMPETITION?

- No evidence to support altering your dietary ratios of macronutrients (carbs, protein and fat) will improve performance the following day. E.g. carb-loading may not benefit you, especially if it makes you put on weight and dehydrates you. You are better off to have a pre-run meal to top up your blood glucose.

4. WHAT IS THE EVIDENCE TO SUPPORT A PARTICULAR MEAL TIMING, CALORIC INTAKE AND MACRONUTRIENT INTAKE FOR OPTIMAL ATHLETIC PERFORMANCE DURING COMPETITION?

- The data shows that the pre-exercise meal has had no improvement on performance during competition and this may be the result of the athlete already conditioned to having the pre-exercise meal.

5. WHAT IS THE EVIDENCE TO SUPPORT A PARTICULAR MEAL TIMING, CALORIC INTAKE AND MACRONUTRIENT INTAKE FOR OPTIMAL ATHLETIC PERFORMANCE DURING RECOVERY?

• **Recovery Meal: Probably the MOST important!**

- Timing and composition of post-exercise meal depend on the length and intensity of session (i.e. whether glycogen depletion occurred. Typically running for longer than 90 minutes will begin glycogen depletion).
- **Consumption of carbohydrates within 30 min after exercise (0.4-0.6g carbs/lb body weight) at 2 hr intervals up to 6 hr will result in higher glycogen levels after exercise.**
- **Waiting longer than 2 hrs to eat will no longer improve muscle glycogen as much.**
- **High glycemic carbs result in higher muscle glycogen levels.**
- **Include protein in this meal for muscle protein repair and promote growth.**

ANSWERS TO QUESTIONS:

1. DURING THE WEEK, MANY OF OUR "WORKING STIFFS" HAVE BEEN GETTING UP VERY EARLY (4:30-5:00 A.M.) AND GETTING IN THEIR RUN BEFORE THEY GO TO WORK. THESE RUNS TEND TO BE IN THE 12K-18K RANGE, AND ONE OF THEM INVOLVES SOME FASTER PACED EFFORT. SHOULD THEY BE EATING DRINKING SOMETHING BEFORE THEY HEAD OUT, GIVEN THAT THEY HAVE TO DO SO VERY SOON AFTER GETTING OUT OF BED? IF SO, WHAT WOULD BE BEST BEFORE THE RUN? HOW ABOUT AFTERWARDS, BEFORE THEY LEAVE FOR WORK??

I am going to assume that majority of these people have had a normal dinner the night before at a decent time (e.g. high carbs, some protein and fat; 5-7pmish). If this is the case then there would have been at least 8 hours between eating and waking to go for a run. This length of time would be long enough to use up all of your blood glucose and start into the fasting stage which begins ~3 hours after your last meal and starts to deplete your liver and muscle glycogen. As well, recently I have read that consuming food prior to your run sends a signal to your brain that there is extra energy available for your workout to allow your muscles to work harder.

Thus being said, 'Yes' you should have something before you go out to try and replenish your system. This could be something similar to what you do Sunday morning or if you are short on time, I would suggest trying 4-5 saltine crackers (plain white, with salt) and wash it down with a sports drink which offers ~15 g of carbs (e.g. 1 scoop Vega Sport drinks). This would offer your body approximately 25g of easy to digest carbs (should be digested within 30min, or while you are getting read). Try leaving them by your bed so they are ready for you as you hit the alarm.

As Don has mentioned that this is a 'hard' run you want to continuously replenish your blood glucose throughout the runs, ~10g of carbs every 15 minutes through a sports drink are the recommendations. But it is your body and your running effort so try the recommended supplementations one run and then without another and see if you feel any different during and after.

*Post run, within **30 minutes** of a hard run you should have at least **60g of easy to digest carbs** (possibly more depending on your weight and if you didn't nourish during the run) such as a **smoothie, cereal or oats**, and **15g of protein**. Have this meal waiting for you so you eat before you shower or do anything else. Then, if you are flying out the door make sure you are taking more food with you because those carbs will be quickly utilized and your body will demand more for proper muscle recovery and repair. Take along with you some toast or bagel with natural nut butter (Peanut, almond, cashew) or yoghurt and granola, or even an energy bar. Basically this '**2nd breakfast**' is going to be **high in carbs** again (~60g) and have **protein** but some **fat** as well.*

My Sunday morning looked like the following:

- *5am: a grapefruit; one serving container of yogurt mixed in a bowl with ¼ cp Kefir, berries and ½ cp Kashi Go Lean Crunch*
- *6:45am: 19K run – hydrate with water and apple juice (doesn't seem to upset my stomach) and supplement with salt sticks*
- *8:45am: at the RR I had waiting a bagel with cream cheese (quick blood sugar) and washed it down with a Vega Chocolate Mocha Smoothie (see recipe below) I made the previous night and froze*
- *10:30am: home – stretched and showered*
- *11:30am: tuna wrap – using a whole grain wrap I spread some of a Roasted Red Pepper & Pesto spread I made and then topped it with ½ can of low sodium tuna and cucumber.....Yum!*

Here is a website you may want to go to in order to help you figure out what your meals should look like based on the type of run:

RACING WEIGHT.com

FREE NEWSLETTER
Latest nutrition info delivered to your inbox.
Your E-Mail Address

SEARCH MY PERFORMANCE NUTRITION ARTICLES BY TOPIC STORE

My Workout Nutrition

Use this tool to get a recommended nutrition plan for your next workout. Simply provide the requested information and click the "submit" button. You will get instant results in the form of a schedule of fluid and energy consumption before, during, and after your workout for optimal performance and recovery.

Choose your activity:

What is the duration of your workout? Hours: Minutes:

How much do you weigh?

What is the expected air (or water) temperature?

What is the intensity of your workout?

Before Workout:	6 oz. sports drink (e.g. Accelerade)
During Workout:	5 oz. sports drink every 12-15 minutes
Fluid Budget*:	39.6 - 50.4 oz*
Post Workout:	12 oz. recovery drink (e.g. Endurox R ⁴)

* Fluid budget = The total amount of sports drink that you should have available for optimal hydration in your workout.

1oz = 30ml

6oz of Accelerade is ~13g of carbs and 3g of protein. (*studies are being done on the benefit of protein during a run...the jury is still out on the verdict)

5oz sports drink – a 240ml (8 oz) bottle of Gatorade is 14g of carbs, so 5oz would be just under 9g of carbs.

12oz of Endurox R4 is 54g of carbs and 14g of protein.

2. ON SUNDAYS, IN AN EFFORT TO BEAT THE HEAT ON OUR LONG RUNS, WE ARE STARTING THE RUNS AT ABOUT 6:00 A.M. WHAT SORTS OF THINGS SHOULD WE BE HAVING FOR LUNCH AND DINNER THE DAY/NIGHT BEFORE, AND AT WHAT TIME? HOW ABOUT THE MORNING OF THE RUN??

I think I have addressed the pre-run meal question, but just to be clear, you need to find what works for you. When you read my Sunday morning breakfast most of you probably thought 'how can she eat that and then run?', well...I can because it works for my system. Truthfully, I think the fact that I am having the probiotics from the bacteria aid the digestion; plus I take an additional probiotic with my breakfast in the morning. So if you are trying to figure out what works for you start simple (corn and rice cereals digest very easy) and keep on hand some ginger capsules to help with digestion if you find whatever you ate has upset your stomach.

As for the night before, again, this should be something you know works for you. For instance, I can eat whatever I like the night before as long as it is at a decent hour (no later than 7pm). I try to have a lot of carbs in this meal (80g), protein (25-30g) and good fats (20-30g). If I have alcohol with dinner I always have water to wash it down. Typically I avoid legumes and lentils for this meal and watch the type of veggies I have; I avoid broccoli, cauliflower, and cabbage. I am ok to have salad the night before with dinner but for some, raw foods might not be the best option.

If you have a sensitive stomach you may want to avoid having fruit and veggies altogether the night before and stick to grain-based carbs. But even the type of carbs you may need to watch as I have found that I have a better run if my pre-run meal is gluten-free; try sticking to rice (pasta or grain form), quinoa or potatoes. There are so many alternatives out there, it is just a matter of paying attention to what works for you.

3. ON THURSDAYS, WE START OUR RUN BETWEEN 6:30-7:00 P.M., AND FINISH AROUND 8:30 P.M. THESE RUNS ALWAYS INVOLVE SOME HIGH INTENSITY RUNNING. I THINK MANY OF US ARE NOT SURE HOW TO WORK OUR LUNCH/SNACK/DINNER AROUND THOSE TIMES.

Hopefully my menu has explained how to plan your day with regards to balancing your meals both spatially and nutritional content. I find that many people have difficulty with the post-run meal in the evening because it is so late but they have worked hard and are hungry. This is the reason why it is so important to get into the habit of having your post-run meal waiting at the RR or pre-made for you at home so that you are replenished within 30 min. If this post-run meal is optimal in carbs and protein it should significantly help curb that need to binge if the rest of the night.

Currently, our clinic night hasn't gone past 10K so typically I am bringing 1 scoop of Vega Chocolate Smoothie (12g carbs, 12 g protein), along with an orange (20g carbs) and I typically have some granola or some kind of bar or mini muffin I have made that I can add in an extra 10g of carbs. You can boost the carb count to the appropriate amount for your calories burned. Especially if you are not supplementing with any carbs during the run you need to have this post-run meal ASAP!

This meal is to combat the 4 R's:

- **Restore**.....fluid and electrolytes
- **Replenish**.....glycogen
- **Reduce**.....muscle and immune stress
- **Rebuild**.....muscle protein

By using Vega as a part of my supplement it is helping to address all of these needs. By mixing the Vega Chocolate Smoothie with water I am getting in more than just a chocolaty drink. The carbs are digested quickly to replenish my glycogen. The protein starts the anabolic process which is necessary for my body to initiate amino acid synthesis in order to repair and grow muscle tissue.

Lastly, there are necessary antioxidants in Vega products which combat the stress exercise puts on our bodies. This stress can be in the form of oxidative (damages cellular tissue) or hormonal (increased levels of cortisol). The main function of cortisol is to release amino acids from muscle proteins and transport them to the liver. Since our bodies prefer to use up liver glycogen first, cortisol kicks in to replenish the liver glycogen. Which means..... that if you are not replenishing your glycogen with the appropriate amount of carbs then you could possibly have elevated levels of cortisol. And as we will soon be heading into the fall and winter running we want as minimal cortisol levels as possible since cortisol suppresses the immune system. Some studies have shown a temporary (1-3 days) of decreased immune system function in athletes following hard exercises.

POST-RUN VEGA ACAI SPORT SMOOTHIE

- 1 scoop of Vega Acai Sport
- 1 cup vanilla yoghurt
- ¼ cp plain Greek-style yoghurt
- ½ cp frozen blueberries
- ½ cp – 1 cp water (depending on how thick you prefer)

Puree everything in a blender.

Nutritional Total:

- 3g fat
- 14g protein
- 66g carbs

VEGA CHOCOLATE MOCHA SMOOTHIE

- 1 container of light ricotta cheese
- 2 tbsp raw agave nectar
- 2 tbsp of Vega Chocolate Smoothie
- 1 cp water
- ¼ cp – 1/3 cp cooled coffee (to your preferred strength)

Puree everything in a blender. I poured this into 8 popsicle molds for a nice summer treat.

Nutritional Total:

- 25g fat
- 90g carbs
- 100g protein

*divide this by 8 and it is ~115 cal (3g fat, 10g carbs, 12g pro)

VEGA VANILLA ALMOND OATMEAL

- 1 cp large flaked oats
- 1 tbsp Vega Vanilla Almond Smoothie
- 1 cp water or vanilla rice/almond milk
- ½ cp fruit of your choice (blueberries work well)

Mix oats and Vega powder together. Add in water/milk and soak oats before your run or over night for breakfast. When ready to eat, add in fruit. Can also swap oats for cooked quinoa.

Nutritional Total: 70g carbs, 16g protein and minimal fat; an ideal balance for a recovery meal.

VEGA VANILLA ALMOND 'RAW' GRANOLA

Dry:

- 1 cp lrg flake rolled oats
- 1 tbsp Vega Vanilla almond
- 1/4 tsp cinnamon
- 1/4 cp sliced almonds toasted
- 1/4 cp dried blueberries
- Pinch coarse sea salt

Wet:

- 1/4 cp coconut oil
- 1/2 - 1 tbsp of raw cane sugar (depending on how sweet you like it)
- 1/4 cp vanilla flavoured almond or rice milk

Directions:

- In a small pot bring the wet to a boil and then remove from heat
- Pour over dry ingredients and mix well
- Drop spoonfuls onto parchment lined tray and place in fridge to allow to set

*Does not hold shape well so better to serve as a granola

VEGA CHOCOLATE 'RAW' GRANOLA

Dry:

- 1 cp lrg flake rolled oats
- 2 tbsp Vega Chocolate Smoothie
- 1 cp unsweetened flaked coconut
- Pinch coarse sea salt

Wet:

- 1/4 cp coconut oil
- 1/8 cp of raw cane sugar
- 1/4 cp vanilla flavoured almond or rice milk

Directions:

- In a small pot bring the wet to a boil and then remove from heat
- Pour over dry ingredients and mix well
- Drop spoonfuls onto parchment lined tray and place in fridge to allow to set
- Holds shape a bit better to form into cookie shape but still very crumbly