Nutrition for Runners

By:
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Background

- Graduated from National University of Health Sciences in December of 2005 as a Doctor of Chiropractic
- Graduated from the University of Pittsburgh in 2002 with a Bachelor of Science in Clinical Nutrition
- Have run with Glen Ellyn Runners since June 2004, completing my first marathon in October 2004

Training

What to eat

What to eat during Training

- In general, a balanced diet a recommended
- Add 100kcal for every mile on top of regular diet (2000-2500kcal)
- Carbohydrate: no less than 50% of total Calories, up to 70%
- Protein: 15-20%
- Fat:15-30%

www.marathonrookie.com/nutrition.html
(caloric needs calculator)

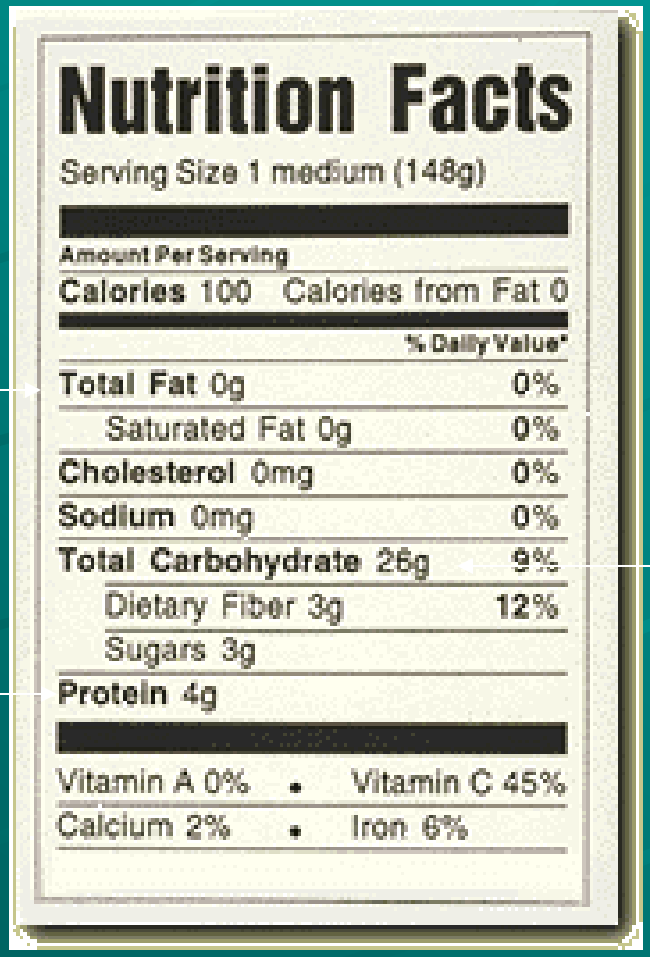
How to use a nutrition label

- Carbohydrate provides 4kcal per gram
- Protein provides 4kcal per gram
- Fat provides 9kcal per gram
- Ex: you are on a 2000kcal diet with 60% CHO, 20% Pro, 20% Fat
  - 2000kcal x .60=1200kcal from CHO
  - 1200kcal x 1g/4kcal=300g of CHO

Nutrition Label

Grams of fat- multiply this by 9 for kcal

Grams of protein



Nutrition Facts

Serving Size 1 medium (148g)

Amount Per Serving

Calories 100 Calories from Fat 0

	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 26g	9%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 4g	

Vitamin A 0% • Vitamin C 45%

Calcium 2% • Iron 6%

Grams of CHO- to get kcal multiply this number by 4 OR subtract this number from the number you calculated earlier

What types of Carbs?

- At least 50% of your carbohydrates should be complex carbohydrates, especially if eating before a run
- Eating simple carbohydrates before a run breakdown faster, raise your blood sugar faster, and create a greater insulin spike ultimately hindering your ability to utilize that glucose for energy

Simple vs. Complex Carbs

Simple

- White bread
- Cakes, Cookies, Pies
- Soda pop
- White rice
- Sugar
- White flour
- Candy
- Jams, jellies, preserves

Complex

- Whole wheat bread
- Whole grain or protein enriched pasta
- Brown rice
- Bean and Legumes
- Whole fruit
- Vegetables
- Low sugar, high fiber, protein enriched cereals

Glycemic Index

- A ranking of the effect on blood glucose of the consumption of a single food relative to a reference carbohydrate (ie white bread)
  - The higher the glycemic index the faster the carbohydrate is broken down in the body and the greater the insulin response

Glycemic Index (GI)

Some factors that influence the GI include:

- Presence of fiber in food (esp. soluble fiber)
- Form of the food eaten (rice cakes vs. cooked rice)
- Presence of fat
- Form of sugar present (fructose vs. sucrose or glucose)
- Combining CHO with protein or fat

Glycemic Index Chart

Glycemic Index

Vegetables

Parsnips	97
Baked Potatoes	85
Pumpkin	75
Beets	64
Corn	55
Sweet Potato	54
Yams	51
Carrots	49
Green Beans	40
All Lettuces	<30
Cauliflower	<30
Eggplant	<30
Onions	<30
Radishes	<30
Yellow Squash	<30
Water Chestnut	<30
Sauerkraut	<30
Tomatoes	15

Fruit

Watermelon	72
Pineapple	66
Cantaloupe	65
Raisins	64
Mango	56
Banana	54
Kiwi	53
Grapefruit Juice	48
Grapes	46
Orange	44
Peach	42
Plum	39
Apple	38
Pear	37
Apricot, dried	31
Grapefruit	25
Cherries	22

Sweeteners

Maltose	105
Glucose	100
Honey	85
Sucrose (table sugar)	64
High Fructose Corn Syrup	62
Fructose (fruit sugar)	22
Stevia	3

Dairy Products

Tofutti	115
Ice Cream, full fat	61
Yogurt, sweetened	33
Skim Milk	32
Soy Milk	32
Whole Milk	27
Yogurt, plain	14

Grains and Cereals

French Bread	95
Instant Rice	90
Corn Flakes	83
Pretzels	81
White Bread	78
Waffles	76
Cheerios	74
Bagel	72
Shredded Wheat	69
Wheat Bread, high fiber	68
Stoned Wheat Thins	67
Grape nuts	67
Couscous	65
Hamburger Bun	61
White Rice	58
Pita Bread	57
Muesli	56
Brown Rice	55
Special K Cereal	54
Oatmeal, slow cooking	49
Rye Kernel Bread	46
Pita Bread, stone ground	45
All-Bran Cereal	42
Spaghetti, white	41
Spaghetti, protein enriched	27

Legumes

Baked Beans, canned	48
Pinto Beans	39
Chickpeas	33
Black Beans	30
Kidney Beans	29
Lentils	29
Peas, dried	22
Soy Beans	18

Other Foods

Dates	103
Jelly Beans	80
Rice Cakes	77
Vanilla Wafers	77
French Fries	75
Graham Crackers	74
Pizza, cheese	60
Popcorn	55
Chocolate	49
Olives	18
Nuts	15-30

Most Common High Glycemic Offenders:

Alcohol: beer and drinks made with juice, soda or sugar

Candy: all types

Dried Fruits: except apricots

Frozen Yogurt: pure sugar with no fat or protein to slow the rate of absorption

Sugar Sweetened Beverages: *Coke, Sprite, Snapple*, bottled teas, spritzers

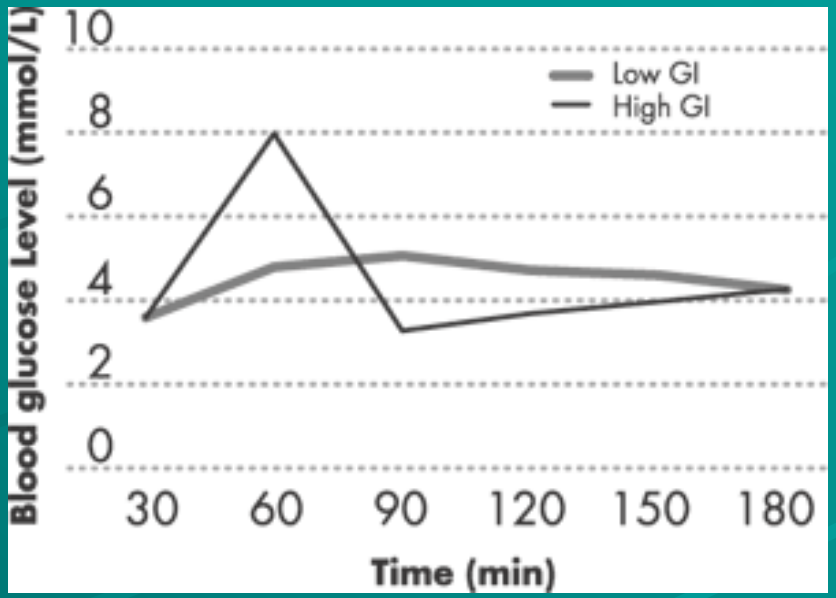
Sugar: brown or white in coffee, tea and on cereal

Tubers and Roots: ***Potatoes*, parsnips, beets, etc.**

Watermelon

All Refined Foods: Cereal, breads, cookies, rice, rice cakes and crackers

Try to eat only those carbohydrates that are **45 or lower** on the glycemic index. Always eat carbs in combination with protein, fat or fiber in order to slow the rate of digestion and, therefore, the glycemic index of that carb.



Protein

- Used to build & repair body tissues (muscles, tendons and ligaments)
- 15-20% of Calories to be from protein
- 1.0-1.2g/kg of body weight
  - 150 pound person eating diet w/15% PRO
  - 150lb x 1kg/2.2lb = 68kg
  - 68kg x 1.2g/kg = 82g of protein
  - 4kcal/g x 82g = 330 kcal from protein
  - 330kcal/.15 = x/1 x= 2200kcal-total number of calories per day
  - If you wanted to just use 15% of total caloric intake then multiply 2200kcal by .15 to get 330kcal and divide by 4kcal/g to get 82g of protein per day

Sources of protein

- Lean beef, chicken, fish, turkey
- Eggs, milk, low fat cheese
- Beans & rice, tofu, nuts
- Broiled, grilled or baked to keep it lower in fat
- Avoid breaded, fried, heavily dressed with dressings or gravy

Fats

- 20-30% fat in your diet, only 10% from saturated fats
- Consume primarily monounsaturated fats, like olive oil
- REMEMBER-fats are the energy source that your body uses after it exhausts your glycogen stores!!!
- LOW FAT DIETS ARE NOT RECOMMENDED FOR RUNNERS (less than 15%)

Fats

- TRANS Fatty acid- found in margarine, french fries and butter cookies. Raise your cholesterol level and risk of heart disease. Try to avoid.
- Saturated Fats-found in dairy foods, coconut and fatty meats. Limit to 10%
- Omega 6-found in vegetable oil, nuts and seeds. Can reduce LDL cholesterol, but too much can reduce HDLs. Limit to 10%
- Omega 3-found in cold water fish, soy oil and nuts. Can reduce triglycerides and cholesterol

•Monounsaturated Fat- Found in olive oil, avocado, and peanut. This reduces LDL and cholesterol. This should predominate in the diet

How many grams is 25% Fat?

- If your on a 2000kcal diet, 2000 x .25 = 500kcal from fat
- 500kcal x 1g/9kcal = 55.5g of fat

So now you know how to figure out how much to eat…

But *what* should you eat and *when* should you eat it?

What to eat

- Preexercise meal comprised of low GI carbohydrate foods may enhance performance more than do high GI carbohydrate foods
- This is because blood glucose concentrations rise at a slower rate, stay high longer with a smaller insulin response, allowing your body to utilize the glucose
- The addition of fat to CHO also reduces the glycemic response

What to eat

- Insulin is the “anti-exercise” hormone that inhibits fatty acid mobilization from the fat cells and stimulates glucose uptake and storage in the liver
- The theory is if exercise starts when blood insulin levels are high, the rate of removal of glucose from the blood into the liver for glycogen storage may be accelerated, increasing the risk of hypoglycemia

When to eat

- During training the most important thing you can do in order to stay consistent with your runs (besides doing the appropriate runs) is staying consistent with your diet
- Eat 4-6 small meals per day, about every 4-5 hours.
- Avoid anything really heavy 60-90 minutes before your runs
- Avoid simple carbohydrates right before your runs
- Data shows that eating 45 minutes to 4 hours before exercise may enhance performance

Hydration

- Drink, Drink, Drink
- Drink a minimum of 8-10 glasses of H_2O per day-more after runs, especially in the heat
- Drink plenty of electrolytes, but not in place of water
- Space your drinks out-not too much too fast
- Drink up until 2 hours before the race and then during to stay hydrated
- If you're thirsty, you're already dehydrated!
- Avoid caffeine and alcohol the night before the long runs and race
- Drink after your runs to replenish what you lost in sweat and respiration

Hydration, cont.

- Race Day: Drink 17-20 fluid ounces of water or sports drink 2-3 hours before exercise and another 7-10 ounces 10-20 minutes before exercise.
- Drink 6-8 fluid ounces every 20 minutes during the run
- Hydration belts and camel backs are great for carrying extra fluid on your person during your long runs

Pre Race Carbo Loading

- Exercise performance during prolonged exercise of 1hour or more can potentially be enhanced by:
  - increasing the amount of CHO stored before exercise
  - reducing the rate at which those stores are burned during exercise
  - ingesting CHO in the appropriate amounts during exercise
- Data suggests that athletes who eat a low-CHO diet would run about 30-45 min slower than if they ate a high CHO diet

Pre Race Carbo Loading

- A high CHO diet (70%) eaten for the last 3 days before exercise causes maximum filling of muscle (and liver) glycogen stores

What to eat the night before the race

- Light, predominately carbohydrate meal
- Avoid foods that you have never eaten before
- Practice different foods on the nights before long runs to determine what works best for you
- Avoid diuretics like alcohol and caffeine
- If you eat dinner early have a light carbohydrate snack before you go to bed

Morning of race day

- Consider waking up a little earlier so that you can get in a light meal 2-3 hours in before the race
  - Toast or bagel with peanut butter with a small glass of orange juice often works well before a race
  - Don’t include too much fat in the meal the morning of because it may lead to cramping
  - Generally speaking you want 400kcal for half marathon; 800kcal for full marathon

Post Race

- Drink as soon as you finish, even after the initial thirst is quenched
- Eat something with carbohydrates within 30 minutes after your run to start replenishing your glycogen stores
  - Make sure to include some protein with your post run meal to speed up recovery
  - You should aim for a 4:1 ratio of CHO:PRO to promote the greatest stimulus of insulin and glycogen storage

Post Race, cont.

- 4:1 CHO to PRO ration has shown:
  - **Faster Recovery.** Protein, when taken with carbohydrate after exercise, has been shown to greatly accelerate the rebuilding and refueling of muscles.
  - **Fewer injuries.** In a study involving researchers from Vanderbilt University and the University of Iowa, Marine recruits suffered 37% fewer injuries during boot camp when they consumed protein after physical training.
  - **A better workout tomorrow.** Research has shown that athletes perform better in the next day's workout when they consume protein with carbohydrate after today's workout.

Supplements

- Omega-3 oils
  - Help reduce inflammation
- Multivitamin
  - In addition, make sure you are getting plenty of calcium and iron (esp. women)
- Electrolytes
  - Sports drinks for maintaining fluid balance, blood volume and nerve transmission
  - Emergen-C High dose vitamin C and B vitamins to help replace trace minerals

Supplements, cont.

- Gel Packs/energy bars
  - Important source of energy during you longer runs. Make sure you practice this before the day of the race if you plan to use them the day of the race
  - Recommended for longer runs (10+ miles), taken every 30-45 min
- Endurox R4
  - 4:1 CHO:PRO post exercise replenisher
- PowerBar Performance Recovery
- Salt licks-more common with ultra marathoners

Thank you for listening!

Questions?

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