General Nutrition

Nutrition is _____.

MACRONUTRIENTS:

1. Carbohydrates. CHO* = 4 kcals**/gram. CHO are the MAIN source of energy for all body functions, especially the BRAIN, NERVOUS SYSTEM and MUSCLES. They are necessary for the metabolism (breakdown, creation and elimination) of other nutrients. List some of your favorite CHO below.
   Sugar/Simple: (honey) _____

   Starch/Complex: (white rice) _____

   High Fiber/Complex: (lentils) _____
2. Proteins. PRO = 4 kcals/gram. PRO are made up of amino acids that are the building blocks of muscle, blood, bone, skin, hair, nails and internal organs. There are 9 essential amino acids the human body must consume. Proteins are responsible for the structure, function and regulation of the body's cells, tissues and organs. They are structural components of enzymes (amylase, pepsin, protease, lipase, lactase, etc.), hormones (estrogen, testosterone, insulin, glucagon, epinephrine, cortisol, thyrotropin (tsh), etc.) and antibodies (immunoglobulins A, D, E, G and M).
   Enzyme function: biochemical reactions essential for respiration, digestion, muscle and nerve function, etc.
   Hormone function: biochemical regulation of metabolism, growth, maturation, etc.
   Antibody function: neutralization of pathogens like bacteria, viruses and allergens, known as immunity.
   List some of your favorite PRO. _____
3. Fats. FAT = 9 kcals/gram. FATs are made up of chains of fatty acids. FATs promote brain development, provide energy, insulation, temperature regulation, structure and protection for our vital organs and assist with absorption of vitamins A, D, E and K. Match up the different types of dietary fats.

Polyunsaturated Fats	butter, lard, palm/coconut oil, cheese, red meat
Monounsaturated Fats	olives, nuts, avocados, olive, avocado and sesame oils
Saturated Fats	margarine, hydrogenated oils
Trans Fats (Avoid these fats!)	soybean, safflower and corn oils

MICRONUTRIENTS: _____ _____

Examples: A, Bs, C, D, E, K (8 Bs: thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, biotin, folate, cyanocobalamin) iron, zinc, copper, sulfur, manganese, iodine, selenium. Electrolytes: **sodium**, potassium, calcium, magnesium, chloride, phosphate

WATER:

You can survive for weeks without food, but only: 1 day a few days 1 month without water.

Functions:
1. Regulates body temperature (evaporative cooling)
2. Promotes waste product removal from exercising muscles
3. Maintains blood flow and oxygen to exercising muscles
4. Optimizes muscle contraction
5. Helps to prevent injuries
6. Lubricates joints
7. Aids in digestion
8. Decreases mental and physical fatigue

Hunger is a feeling of discomfort or weakness caused by lack of food, coupled with the desire to eat. Circle your hunger cues: stomach pangs fatigue poor concentration headache irritability shakiness sleep disturbances

*CHO = carbon, hydrogen, oxygen. **Scientifically, kcal = kilocalorie. 1 kcal = 1 Calorie = 1000 calories = the energy it takes to raise the temperature of 1 kg of water by 1 degree Celsius. Food labels list Calories, but "calories" is often used.

Sports Nutrition

Optimal Performance is _____.
It is achieved by considering the physical demands of the sport (intensity, duration and frequency), your size and the environment (temperature and humidity). It is directly correlated to: genetics training and recovery nutrition.

NUTRITION
Recommended macronutrient intake for athletes: CHO 50-60%, PRO 15-20%, FAT 20-30%.
Carbohydrate is the single most important source of energy for athletic performance. It is a rapid source of fuel to working muscle and is burned efficiently with (aerobic) or without (anaerobic) oxygen. It is broken down three times faster than fat. Daily consumption of 50% CHO is recommended to help preserve muscle protein, prevent muscle fatigue and assist in the use of fat as a fuel. **Only good nutrition will prevent bonking during practices or races.**
Glycogen = carbohydrate mainly stored in: muscle liver cells which can provide approximately 2,000 calories of energy. A mountain bike racer may burn 500-1000 calories/hour = glycogen depletion in _____ hours.

HYDRATION
Water losses: urine, respiration and _____. Fun Fact: your feet lose 1 cup of moisture/day!
Sweat = _____, _____, potassium, calcium and magnesium.
Thirst: is is not a good predictor for an athlete's fluid needs. Dehydration results in lower blood volume that leads to higher blood sodium concentration that activates the human thirst reflex which is a delayed response. A delayed response means you are already dehydrated!
Easiest tool to regulate fluid intake is urine color.
Best urine color: clear pale, straw color dark amber
Hydrate throughout the day. Prehydrate before practices and races so that you start both without a fluid deficit. Avoid alcohol and caffeine which are both diuretics. Diuretics cause the body to eliminate fluid.

Prerace:
Carbo-loading = a method of increasing your muscle cell's glycogen content beyond its usual capacity. Some favorite CHO to carbo-load: spaghetti/pasta toast/bagel potatoes oatmeal pancakes/waffles
Tip: Don't overeat the night before as this can cause upset stomach and sleep disturbance. Eat only familiar foods.
Start prehydrating 1-2 days before your race.
Race Day Morning:
It is recommended that your last full meal be consumed about 3 hours before your race. If your race is at 8.30 am, try to eat a 400-600 kcals breakfast of mostly CHO with limited PRO and FAT by 5.30 - 6 am, e.g. oatmeal and scrambled eggs.
Tip: Don't eat too much fat or fiber as both slow digestion and can cause indigestion. Eat only familiar foods.
If your race is later in the morning you can eat 50-100 kcals of a mostly CHO snack 30-60 minutes before your race.
Drink 1-2 cups water or sports drink 15-30 minutes before your race. Avoid soda and fruit juices with high sugar content as these may cause: anger happiness discomfort during the race.
During race:
Eat 30-60 grams CHO/hour via energy chews, gels or sports drinks. Some options: 4 clif bloks (= 32g CHO) or 2 clif shot gels (= approx. 50g CHO) or 20 fluid ounces Gatorade Thirst Quencher (= 36g CHO).
Tip: Consume only: expired new familiar products and flavors.
Drink ½ - 1 ½ cups (4 - 12 fluid ounces) water or sports drink every 15-20 minutes.
Postrace:
Within 30-60 minutes eat a snack of CHO and PRO. Adding PRO to this snack will speed recovery by increasing glycogen synthesis by up to 2% more than just eating CHO alone. Also, lower levels of circulating creatine kinase, a marker of muscle tissue damage, are found in athletes who incorporate this snack into their recovery protocols.
Easy recovery choices: chocolate/vanilla milk greek yogurt and fruit cottage cheese and fruit yogurt smoothie
whole grain cereal and milk nut butter and honey/jam on whole grain bread
Within 1-2 hours eat a full meal. This will ensure you maximize your glycogen restoration rate.
Drink 3 cups fluids for every pound of weight lost. Check your urine color and hydrate accordingly.