

The Truth About Using Fuel (Calories) and Staying Full

by Marla Richmond, M.S., ACE-certified

Missed conceptions about using calories during exercise ...

Missed Conception #1

After performing your typical cardio routine on the gym equipment, you proceed through a memorized resistance routine on weight-stacked machines. As your skin becomes a deep red and perspiration saturates your heavy sweatshirt, you assure a concerned friend that you get a better workout if you sweat more.

True or False?

How much you sweat indicates the quality of your workout.

False: Rather than the quantity of sweat, the intensity and duration of a workout determines the quality of (as well as the calories used in) a workout.

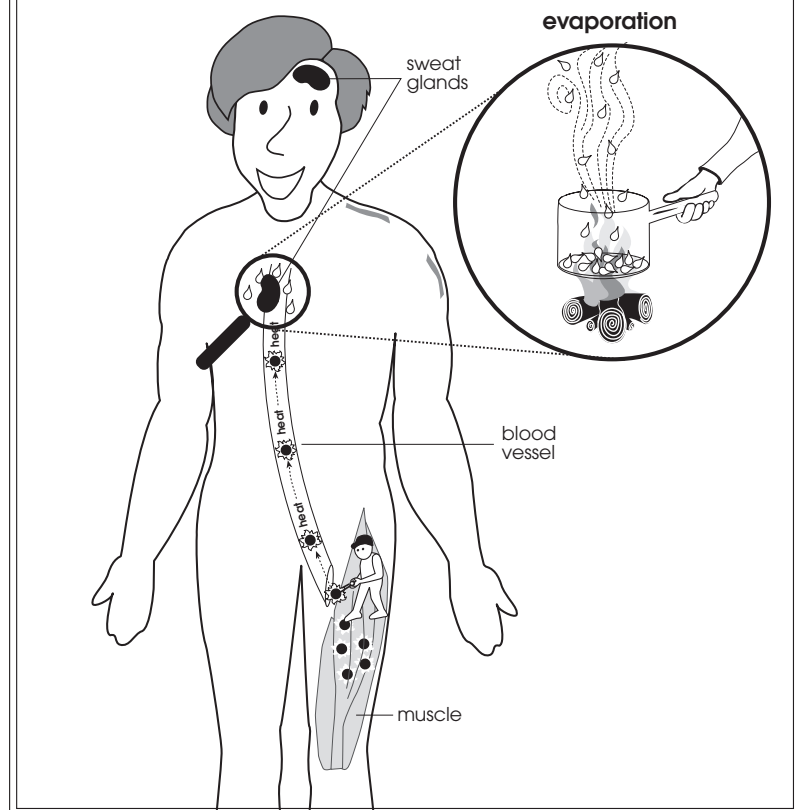
HEAT IS A GOOD THING

Body tissues move more smoothly and freely in fluids that are warm and “liquidy” rather than cold and gelatinous. Think about the pliability of putty stored in a cold garage. Additionally, elevated body temperature, i.e., 100-101 degrees Fahrenheit (not to be confused with that of a fever from illness) enhances a number of chemical reactions that support muscular work.

LOSING HEAT THROUGH SWEATING

As working muscles use fuel, heat is released as a by-product, thus raising the temperature of body tissues. While such heat supports physical activity, too much heat surging through the body will “cook” your brain and shut you down. Sweating, followed by evaporation are the body’s primary ways of getting rid of excess heat. The important processes described below ensure that body temperature is maintained in a safe range. Heat that accumulates in muscle must somehow find its way out of the body.

Losing Heat Through Sweating

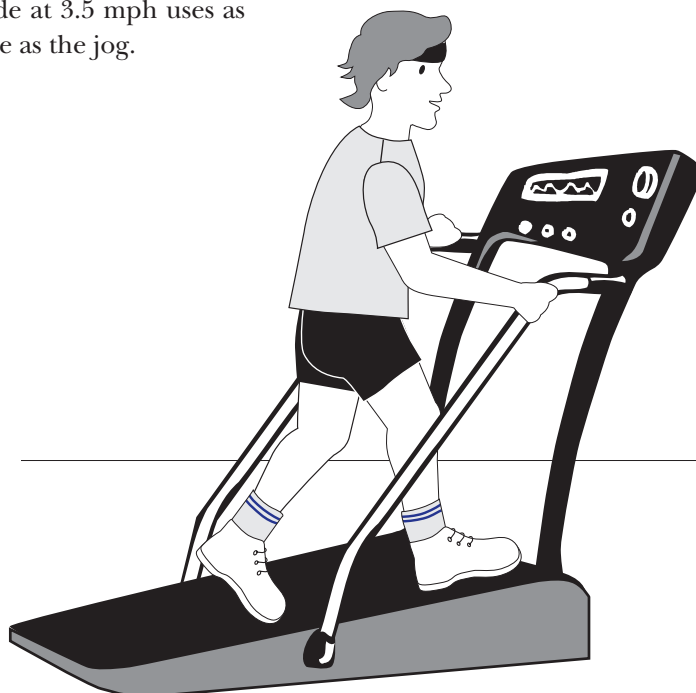


- Heat is released as a by-product of using fuel to perform work.
- Such heat accumulates in muscle, thus raises body (core) temperature.
- Muscles and other body tissues require increases in body temperature for optimal function.
- Excess heat within working muscles is conducted into the fluid of the blood.
- The heated blood fluid flows through the blood vessel system to the skin surface.
- Sweat glands throughout the body squirt out beads of water.
- Water beads capture the heat and like a pot of water cooking on a stovetop, the beads come to a boil.
- The beads of sweat evaporate into the air, taking the heat with it.

Wearing heavy clothing or that which prevents evaporation actually prevents you from reaching your desired intensity and diminishes your ability to sustain a quality workout.

Missed Conception #2

You and your friend warm up for your cardiovascular exercise on treadmills. After a 5-minute warm up and dynamic stretch, you pace yourself at 3.5 miles per hour (mph), and add a 13% grade, while you hold onto the front guardrail. Your friend jogs flat at 6.0 mph. You boast that the steep grade at 3.5 mph uses as many calories per minute as the jog.



True or False?

Walking at a 13% grade at 3.5 mph consumes as many calories per minute per body weight as a 6.0 mph jog.

True: Theoretically, a 3.5 mph walk at a 13% grade uses approximately the same oxygen, therefore calories, per body weight as a 6.0 mph jog. But, before you claim your tally or post it in your workout journal, consider this. Hanging onto a guardrail diminishes the effort required to walk a given grade. It reduces the actual oxygen consumption, therefore, calorie expenditure.

CARDIO PROVIDES AN OXYGEN DELIVERY CHALLENGE

The body requires a specific quantity of oxygen to make and use energy for a given workload. During cardio, the heart pumps oxygen-laden blood to selected muscle groups; muscles slurp up the necessary oxygen. Each type of aerobic activity involves a specific set of instructions sent from the nervous system through the spinal column then out to muscles selected for a particular exercise. Each demands a different effort, therefore oxygen consumption.

There are endless patterns, kinds, and sizes of movement. And, there are many different ways to provide equal and

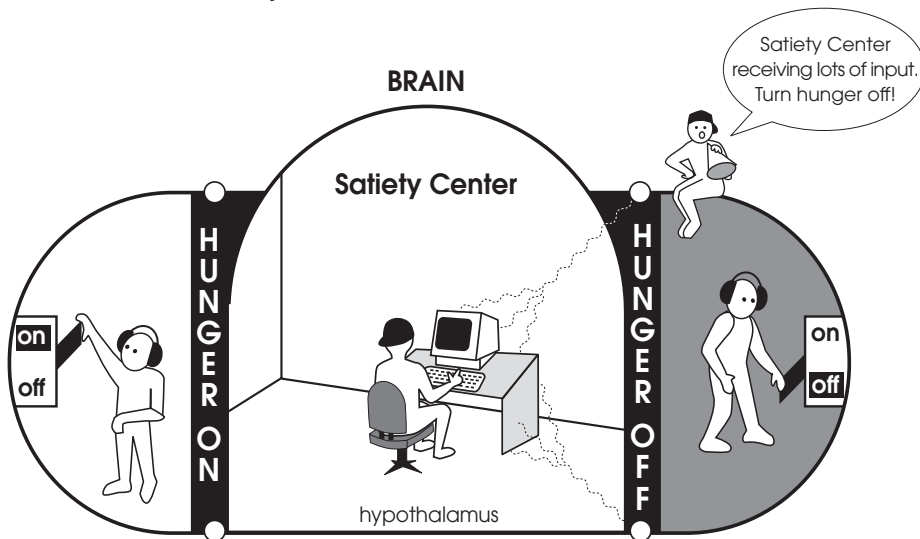
comparable oxygen delivery or cardiovascular challenge to the body. Individual limitations and preferences determine choices of aerobic activity. Some of us are great cyclers and can barely jog a minute. Some people can crawl for miles in water while others gasp for air as they crawl to the edge of a pool. Some people need to oppose gravity to maintain bone mineral density yet have “done in” their knees. Thus, they use an elliptical trainer as a cross training choice.

YOUR ACTUAL EFFORTS REVEAL THE TRUTH

Regardless of the choice of a cardiovascular activity, you can use a comparable quantity of oxygen per your body weight performing a variety of different activities. In fact, cross training is highly recommended. However, be aware of the tally that the cardio machines feature ‘cause you can easily fool them. The calorie tally on treadmills or stair machines do not account for your hanging onto guardrails. You are not doing the work or using the calories if you are holding on. By the way, the machines will often underestimate your calorie use if you lie about your age and weight. The fact is, you can fool the equipment but you can’t dupe your body. Your actual efforts will reveal the truth, so you may as well let go.

The Physiology of Fullness

by Marla Richmond, M.S.



TAKE CONTROL OF YOUR HUNGER

You might recall times when you were very hungry and you just started wolfing down a whole bag of chips, crackers, or cold cereal. Chances are good that you didn't realize why you couldn't control yourself. The fact is too much hunger causes you to binge. Hunger signals will get so strong, they will take control of your behavior. And there is nothing that you can do about it. It is important for you to take control of your hunger so that it does not take control of you.

Hunger is a basic drive. Like any other animal, when you feel hungry, you are driven to eat. You will seek food in order to satisfy your hunger need, without necessarily thinking about making healthy food choices.

When your immediate fuel supply is low, or when your fuel storage is running out, the hunger center in a part of your brain called the hypothalamus drives you to seek food. Your body has several ways to remind you to eat. Your stomach growls and aches; you may get a headache or shaky. Strong hunger signals continue until you eat.

Hunger signals from your brain are strongest when you haven't eaten for a while. For example, if you skipped your last meal, it is likely that your blood levels of the energy-yielding nutrients (carbohydrates, fats, and protein) are low. This is especially true of your blood levels of glucose. Healthy foods that provide glucose are fruits, veggies, low-fat dairy, and whole grains. The presence of various nutrients in your blood indicate that you have eaten, digested, and absorbed foods recently.

Hunger signals from your brain are also strong when your stomach is empty. Stomach walls have special stretch detectors that tell you how full you are. When you are full, signals are sent to your brain to turn off hunger. These signals tell you to stop eating (that is, if you pay attention and listen). Hunger signals continue until your stomach is full.

Your body makes sure that you have enough energy to be physically active. In fact, a report of your fuel storage status is regularly sent to your brain. As your body runs low on its fuel storage (both carbohydrate and fat), a variety of mechanisms cause hunger signals to drive you to seek food in order to replenish it.

The opposite of hunger is satiety. When you achieve satiety, or a feeling of fullness, hunger signals are turned off. (FYI, research has shown that alcohol interferes with satiety signals.)

Pop Quiz – by Merle Levy, LDN and Marla Richmond, M.S.

**What do you suppose has more calories?
Which foods would fill you more?**

1. Six cups of air-popped popcorn or eleven baked chips?
2. 4 ounces of orange juice or two tangerines?
3. 2 tablespoons of raisins or an apple, orange, or pear?
4. 15 jelly beans or a bowl of oatmeal
5. A one-ounce cube of cheese or a bowl of vegetable soup?

If you guessed that the calorie values are the same, you are correct. If you wonder which foods would fill you the most, compare them yourself and feel the difference in fullness.

10 TIPS to keep you fit and “full-filled”

1. Begin a personalized exercise program that includes the appropriate frequency, intensity, time, and type of aerobic activity.
2. Learn how to correctly monitor the intensity and quality of your workouts rather than believe the calorie tallies on fitness equipment. Follow workouts with appropriate stretches.
3. Choose aerobic activities that you enjoy—those that fit your goals, abilities AND into your busy schedule!
4. Perform at least two days per week of a comprehensive resistance training program in your room or at the gym.
5. Stay cool! Wear clothing that breathes and allows for heat loss. Tons of sweat does not necessarily add up to a great workout.
6. Eat small, frequent meals that fill you up with the fewest calories and the greatest nutrient values.
7. Learn how to read food labels to find out what’s in it for you.
8. ALWAYS keep healthy, filling and nutritious snacks accessible—in your room; in your backpack; in your car.
9. NEVER, EVER skip meals; hunger causes overeating and poor food choices, guaranteed!
10. Make and take time for you—to relax, recharge and enjoy each day!

DISCOVER THE FOODS THAT FILL!

*Power at the Plate: The Safe &
Sensible Guide to Healthy Eating
and Weight Control*

– by Merle Levy, LDN

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