

# The Great Outdoors

**Get out and play. But take the proper precautions when out in the summer heat**

BY DR. GREG WELLS

When it comes to the game of golf, the environment plays a big role in determining performance outcome. Environmental factors such as heat, cold and travel stresses such as jet lag have powerful impacts on the human body, including the muscles, blood, nerves, heart and lungs. Fortunately, well-educated and properly prepared players can cope with stressful environments like playing in the summer heat.

## HEAT STRESS

Exercising in warm environments can increase the body's metabolic rate (how much energy we produce in our body) by up to 18 times.

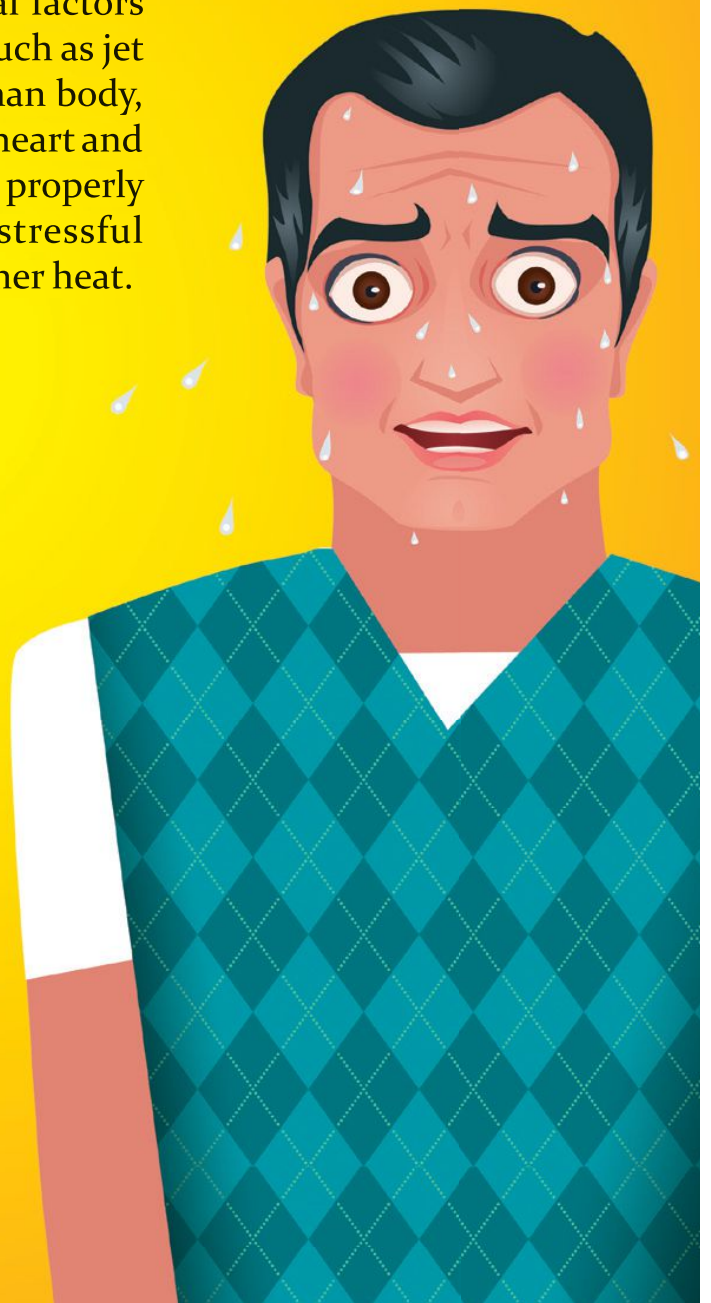
That is enough to increase the core temperature of the body by one degree every five minutes. If this were left uncontrolled, the body would stop working in about 20 minutes.

Playing a round of golf where you walk the course burns about 1,500-2,000 calories, so we need a lot of energy to play well. We also have to manage ourselves so that burning foods to provide energy for our muscles improves our performance on the course.

The circulatory system attempts to regulate body temperature and blood pressure at the same time. When heat stress is excessive, which can be the case during a round of summer golf, blood pressure regulation becomes the priority, resulting in impaired regulation of body temperature.

In order to regulate the core temperature during exercise, heat must be effectively transferred from the core to the skin and then rapidly dissipated to the environment. To accomplish this, blood circulates to the muscles and internal organs where it picks up heat and then circulates it to the skin where it is passed out of the body via evaporation.

This is accomplished through sweating because water evaporating off the skin will cool the skin and the blood that is close to the surface.



This leads to key recommendations for playing in the heat:

- Consume fluids to help the body cool itself optimally by sweating.
- Wear clothing that allows for ventilation and “wicking” of water off the skin. Team Canada is sponsored by Under Armour who makes some great clothes for this.
- Clothing should be light in colour. This reflects light from the clothes rather than absorbing it. Wearing a white hat and shirt can make a huge difference when playing in the heat.
- Wet your skin. Sponging or spraying the head or body with cold water will help to cool the skin (but will not effectively decrease core body temperature).
- If you are travelling to a hot location, acclimatize. Even a few minutes in a sauna can prepare your body for playing in the heat. Heat acclimatization will increase your body’s cooling efficiency.

Playing in the heat means you will sweat. That is actually a good thing – that is how the body stays cool. Sweat not only contains water, but also electrolytes such as sodium, chloride (together, they are salt) and potassium. All are important for many functions in the body and play key roles in muscle function.

So when playing and practising in hot environments, players should rehydrate with sport drinks that contain electrolytes. The sport science team at Golf Canada has partnered with the Canadian Sport Centre Network to develop a sport drink mix for our national teams, which you can check out at this link - [tinyurl.com/3jy2mvx](http://tinyurl.com/3jy2mvx)

Diluted fruit juices with added salt are an option (50% juice/50% water) but do not sit well with all people during exercise (determine your intestinal tolerance and comfort level).

As important as it is to drink fluids while exercising in the heat, it is also important to avoid drinking too much, as the need to urinate and feeling bloated can have a negative impact on performance.

The recommendations for how much and what to drink during exercise in the heat are as follows:

- Drink enough fluids to replenish water weight during a round. To determine this, monitor weight changes during training/competition sessions in a variety of weather conditions. For every kilogram lost, consume an additional 1.5 litres of fluids. Take note and do better the next time but do not aim to gain water weight during a course. If you want a place to start, aim for 500 ml of fluids per hour in small, frequent doses. Take a few sips of fluid at the end of each hole while you are waiting to tee off. If it is humid, more fluid will be needed.
- Drink cool fluids (minus 15-20°C) as they are absorbed faster.
- When using sports drinks as a fuel source, look for appropriate forms of sugars such as glucose, sucrose, glucose-fructose, glucose polymers, maltodextrin, and/or dextrose. Avoid fructose-dominant drinks and look for carbohydrate concentrations of 40 to 80 grams per litre. Food is another practical fuel option.
- Include electrolytes (i.e. sodium and potassium) in your fluids or solids. As mentioned, good quality sports drinks will contain favourable amounts. Otherwise, adding sea salt to water and food also works. (Note: ½ teaspoon of salt provides 1100 mg of sodium – an amount suitable for high heat conditions). Fruit is a great hydrating food that provides suitable carbohydrates and potassium (another valuable electrolyte).

## IMPORTANT

- Practice all of these recommendations repeatedly. Determine the timing, quantity and type of fluids, foods, and electrolytes that work best for you. These are guidelines that require practice and individualization.
- Thirst lags behind dehydration – if you’re thirsty you may already be dehydrated. By creating a personalized plan, you can avoid this situation.

## HEAT ILLNESSES

It is important to know that heat illnesses are preventable. Make sure you are practising proper fluid replacement and gradual acclimatization to the heat and exercising in the heat.

### 1 MUSCLE CRAMPS

Heat cramps are involuntary muscle contractions and are related primarily to excessive loss of water and electrolytes.

#### Treatment:

- Hydrate
- Mild stretching of the muscle(s) in spasm
- Ice massage of the muscle(s) in spasm

If prone to muscle cramping, ensure that your electrolyte levels are being replenished. You may also consider supplementing in advance with magnesium and calcium using high quality capsule or powder forms (avoid oxide and carbonate, respectively) within the days and weeks before an event. These minerals serve to improve muscle tonicity, recovery, and contractility. A proper warm-up will also help prevent muscle cramps.

### 2 HEAT EXHAUSTION

Heat exhaustion results from inadequate replacement of fluids lost through sweating. Symptoms to look out for: profuse sweating, cool and moist skin, dizziness, hyperventilation.

**Treatment:** replace fluids and seek a cool environment.

### 3 HEAT STROKE

Heat stroke is a serious, life-threatening emergency that occurs when the body loses ability to dissipate heat. Symptoms to look out for: collapse with sudden loss of consciousness, flushed, hot skin, less sweating than in heat exhaustion, shallow breathing, high body temperature.

**Treatment:** hospitalization, lower body temperature (cool environment, sponge down with cool water – do not immerse – fan with towel).