

**Beat the Heat**  
***Training and Playing in Hot Weather***  
***for Coaches, Players, and Parents***  
***Greg Sills***

During the 1999 Women's World Cup final game, and the heat wave that followed, I was reminded what serious business it is to train and perform in hot weather. Coaching soccer and training for long distance races during the heat of Texas summers taught me some lessons which I thought might be useful for other coaches, parents, and players.

**What Happens in Hot Weather?**

Young players may only have 3 or 4 liters of blood, and as with any substance in demand, there are compromises when double-duty is required. During your warm up exercises, blood vessels in your skin and internal organs constrict to give more blood flow to your legs, providing much needed oxygen. As you and the weather become hotter, surface blood vessels begin to dilate, diverting blood to the skin for cooling. During match conditions on a hot day, this can result in 30-40% of a player's blood flow being detoured from the muscles to the skin, as opposed to maybe 15-25% on a cool day. This can account for almost 20% decline in total aerobic capacity for average players, and 10% for elite athletes like our U.S. Women's Team.

A couple of other things happen to our players in hot weather as well. In addition to having less blood carrying oxygen to their running muscles, less blood is circulated to the liver for removing lactic acid. High lactic acid levels in the blood can lead to cramps, reduce player speed, and create the phenomenon runners know as hitting the wall. Finally, players will notice that their heart rate is maybe 10% higher after 30 minutes of playing on a hot day than it would be on a cool day. This is because your heart's pumping capacity per beat diminishes as your core temperature rises. Not surprisingly, players may tend to slow down and lower their intensity until their heart rate drops to the level they're accustomed to.

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**What Can We Do?**

***Conditioning*** - Believe it or not, your level of fitness alone can determine a great deal about how well you will stay cool.

- High intensity interval training will raise player blood volumes more than running laps at a slower speed, even if the laps add up to a greater distance. Relays, with or without a soccer ball carried at the feet, is one way to introduce this to your training program. Sprint training like this will raise your maximum oxygen intake, and the higher it is, the less you'll be effected by the blood diversion problem.
- Fit players sweat at a lower temperature, and vasodilate slower, both of which keep them cooler than players that are out of shape. Also, players in better condition sweat greater quantities, which of course results in more cooling ability. This is a great reason for staying active during your summer break before the serious fall training begins!

***Drinking Water*** - Increased fitness and training in hot weather both greatly increase your sweating capacity (it can double during a 2 week soccer camp in hot weather).

- Since sweat is mostly water, as is your blood supply, players obviously need to drink more water in hot weather. Coaches — give your players frequent short water breaks. Remember — the blood supply is performing double duty for your hot players: cooling the skin and providing oxygen for the muscles. They need all of it they can get!
- Drinking water during practice or a game is only part of the solution, though. Players can lose water about twice as fast through sweating as the body can assimilate the water that they drink. That's why the most important time to drink fluids is before exercise. I encourage players to be well hydrated 2 hours before game time. If the players wait until they are thirsty to drink water while training on a hot day, they're probably already dehydrated, and won't really catch up until after practice.

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***Other Tricks*** - Finally, while no replacement for conditioning and hydration, these tricks can sure make the super hot training sessions more pleasant:

- Spray bottles aren't just a gimmick — a little spray to the face can really transfer some heat away from a little (or big) player's body, without the dehydration that goes with sweating.
- For the really ridiculously hot practices or games, I've taken a handful of kitchen towels in a chest of ice water. The players love draping the cold towels around their neck and face during a quarter or half time break. The towels act like a heat sink carrying heat away from the player and into the ice chest.

**Source**

Outrunning the Heat by Rick Niles, Swim Bike Run, August, 1993