

1996 Atlanta Olympics: Weather Conditions

The history of major championship marathon races held in hot weather provides many examples of serious heat illness, including Dorando Pietri in the 1908 Olympic marathon in London, Jim Peters at the Empire Games marathon in Vancouver in 1954, and Gabrielle Andersen-Schiess at the 1984 Los Angeles Olympic marathon. Athletes in shorter running events and in sports such as rugby, soccer, and American football have also fallen prey to the heat. The common feature in the majority of these instances was the high ambient temperature. Athletes who are used to living, training and competing in temperate climates are placed at a significant disadvantage when an event is scheduled for hot, humid conditions, and a training strategy must be implemented to minimize this disadvantage.

Gabriela Andersen-Scheiss was a ski instructor in the U.S. state of Idaho when she represented Switzerland at the 1984 Olympics. Twenty minutes after the winner, [Joan Benoit](#), crossed the finish line, the 39-year-old Andersen-Scheiss staggered into the stadium, suffering from heat prostration. Her right leg was stiff and her left arm was hanging limply by her side. While spectators gasped in horror, doctors noted that she was perspiring - a good sign - and they let her continue. For 5 minutes and 44 seconds, she lurched along the final lap around the track, occasionally stopping and holding her head. Finally she fell across the finish line and into the arms of waiting medics. Andersen-Scheiss placed 37th. Remarkably, she recovered rapidly and was released by medical personnel only two hours later.



About 75% of the energy turnover during exercise is wasted as heat, inevitably causing body temperature to rise. In cool environments, much of this body heat can readily be transferred to the air (Nadel, 1988), but **when the environmental temperature exceeds skin temperature, heat is gained and body temperature can rise to dangerous levels.** At high ambient temperatures when it is not excessively humid, the only effective means of heat loss is by the **evaporation of sweat secreted onto the skin.** The evaporation of sweat is effective in dissipating large amounts of heat and will **limit the rise in core temperature** to no more than 3-4°C in all but the most extreme conditions of heat and humidity.

In the conditions prevailing at the 1996 Atlanta Olympics and at many other sporting events, the reduction in performance would be even greater. It is recommended that hard exercise should not be undertaken when temperature and humidity are high (Figure 2),

but major sporting events are **seldom canceled even when environmental conditions are extreme.**

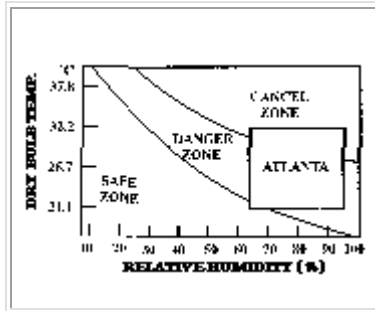


Figure 2. The combination of ambient temperature and humidity dictates environmental heat stress. Typical environment conditions in Atlanta in 1996 demonstrates the severity of heat stress encountered by athletes.