

Hydration During Aerobic Exercise and Heat Stress

During exercise in the heat, sweat output often exceeds water intake, which results in a body water deficit or reduced hydration. This water loss comes from both inside cells and from the circulation. As a result, the reduced blood volume leads to increased blood levels of sodium and poorer perfusion of the skin and sweat glands which may lead to impaired adaptation to exercise in hot environments. Aerobic exercise performance is impaired by reduced hydration which is why hydration is recommended during aerobic exercise especially in warmer environments. The warmer the environment the greater the potential for decreased performance in the absence of adequate hydration. There is also greater heat storage leading to a rise in core temperature when there is reduced sweating and reduced skin blood flow. When sweat dries, heat energy is normally removed from the body. Sweating is a physiological form of air conditioning enabling survival in hot and humid environments. Spicy foods are more commonly part of the cuisine culture in places with warmer temperatures, and one of the theories for this spice habit is that stimulating sweating will make the core temperature of the body more comfortable. In addition, reduced blood volume and the movement of blood to the skin for sweating may make it difficult to maintain normal blood flows and blood pressure needed for the heart to pump adequate amounts of blood to simultaneously support metabolism and thermoregulation during exercise-heat stress.

Recommended Review: Sawka MN. Physiological consequences of hypohydration: exercise performance and thermoregulation. *Med Sci Sports Exerc.* 1992 Jun;24(6):657-70. Review.