

STAYING HYDRATED ON THE ICE



Lawrence Spriet, Ph.D., Department of Human Health and Nutritional Sciences, University of Guelph

Hockey is not traditionally known as a sport where dehydration is a risk. Most research in this area focuses on outdoor sports played during the summer months, like soccer and football. However, we'd be remiss to assume that hockey players do not lose considerable amounts of fluids through sweat in games and practices. Despite the two period breaks and the constant shifting of lines, hockey players are subjected to high-intensity skating sprints and wear layers of equipment and helmets. They are also highly trained athletes that sweat more than untrained people and they play in arenas that are quite warm. All this contributing to the same serious risk of dehydration as in outdoor summer sports.

Through the University of Guelph and funded by the Gatorade Sports Science Institute (GSSI) Canada, we have conducted sweat and hydration research on elite hockey players at the OHL level over a three-year period. The research was designed to determine the hydration habits and status, as well as the fluid and electrolyte (sodium) losses during practice and game situations. The multi-step test included a urine sample to test players' pre-practice hydration status, a weigh-in before and after practice calculating in the amount of fluid a player drank while on the ice to determine their sweat rate and the application of sweat patches to each player's forehead to determine the loss of sodium.



We found that more than 50% of the players began practice mildly dehydrated and, on average, players voluntarily replaced only 60% of their sweat loss. This resulted in the alarming finding that about one-third of the players lost between 1-2% of their body mass during the practice. At this level of dehydration, players are likely to suffer from a decrease in their on-ice performance.

Athletes, in particular hockey players, often think they drink enough during a game or practice. However, they don't realize the magnitude of sweat loss and therefore, underestimate how much they need to drink to replace the fluids lost.

Sweating excessively without fluid replacement can limit performance because it decreases the plasma volume portion of the blood, which then impairs the body's ability to meet the blood flow needs of the contracting muscles. This also makes it more difficult for the body to distribute heat away from the core to the skin, where it dissipates. This causes the core temperature and heart rate to rise, leading to feelings of fatigue.

Although our research took place on elite hockey players, there are lessons learned for hockey coaches and trainers of all levels. Our recommendations to coaches and trainers who are involved with players that are ~16 years of age and older are:

Players should aim to drink 500-700 ml of fluid in the hour before games and practices. It's preferable that players drink a sports drink because the electrolytes will help keep the fluid in the body better than plain water.

Players should consider drinking a sports drink during practices and games. It replenishes the fluid and the salt lost in sweat and provides carbohydrate, the primary fuel for the muscles and the brain in sports like hockey.

- Players should test whether they are drinking enough by weighing themselves before and after practice and games.
- If weight is stable or close to stable the player is doing a good job of hydrating.
- If body mass loss is close to or over 1 kg, dehydration is occurring and the player needs to drink more during practices and games.
- Players who lose body weight through sweating during practice and games and must play again the same day should replenish the fluid they lost before leaving the locker room.

Dr. Lawrence Spriet is a professor at the University of Guelph and the advisory board chair of the GSSI Canada. His hockey hydration research was published in *Applied Physiology, Nutrition and Metabolism* 33:263-271, 2008.

FOR MORE INFORMATION ON THE GATORADE SPORTS SCIENCE INSTITUTE (GSSI) LOG ON TO: www.gssiweb.org or e-mail GssiCanada@QTGCanada.com.