Significant Risk of Dehydration in Young Soccer Players

Abby Milton, A. Olson, Ph.D, R.D., L.D., M. Campos, Ph.D.
College of Saint Benedict/Saint John’s University
Department of Nutrition

Introduction

- Soccer is a physically demanding sport, that is often played during hot, humid weather
- Children have a lowered sweating capacity, greater surface area relative to body mass, and produce more metabolic heat, and have a less-sensitive thirst mechanism, compared to adults (1-5).
- “Voluntary Dehydration” occurs when the athlete does not drink enough fluids to replenish fluids lost, even when fluid is available to them; this is a major factor that contributes to dehydration in children (6).
- All these factors make children a high-risk group for developing heat-related illnesses

Procedure

- Two female teams (13 girls, aged 13-15) and two male teams (21 boys, aged 11-14) were recruited from two local youth soccer associations
- Study was approved by the Institutional Review Board (IRB) of the College and written informed consent was signed by both the parent/guardian and the subject.
- Subjects completed a short survey about their individual drinking habits and knowledge
- Data collected included subject’s body weight, choice of Gatorade or water, and fluid consumption during competition.
- Pre- and post-competition urine samples were collected
- Urine osmolality was measured using the Fiske 110 osmometer

Results

- Only 18% of the total number of subjects came to their games well hydrated
  - 61% of girls and 57% of boys started significantly dehydrated (7).
- The choice between water and Gatorade was approximately 50/50;
  - 14 chose water
  - 13 chose Gatorade
- 6 alternated beverages
- Those consuming Gatorade drank approximately 310 ml more fluid.
- Fluid consumption during the game should have been between 1200-1800 ml, but average fluid consumption was only 881±240 ml
- 46% of girls and 47% of boys were still significantly dehydrated after their games.
- Most subjects (70%) reported being thirsty pre-competition.
- The survey revealed these factors would improve subjects’ fluid consumption:
  - 63% thought more breaks
  - 35% suggested flavored drinks and/or more drinks
  - 19% suggested more time during breaks
  - 14% suggested more bathrooms (port-a-potties)

Conclusions

- Most players (82%) started their games dehydrated, which places them at risk to develop heat-related illnesses
- Fluid consumption during the game was inadequate for most players; they failed to drink sufficient fluids to improve their status during the game.
- Coaches, parents, and players must take precautions to prevent dehydration and consider providing more breaks, time to drink, and flavored drinks during a practice or game situation.

Acknowledgements

- GCSA and CMYSA St. Cloud soccer associations for their participation
- The CSB-SJU Summer Undergraduate Research Program

References