

CONTACT: Ginger Pinholster/John Toon
(404) 894-3444

KEEPING COOL: EXERCISE RESEARCH MAY BENEFIT OLYMPIC ATHLETES, SOLDIERS AND WORKERS

**For Immediate Release
November 19, 1990
Color & B/W Available**

During prolonged running in the heat, carbohydrate-electrolyte "sports drinks" are more effective than water for boosting performance while preventing dehydration, overheating and fatigue of athletes, according to Dr. Mindy Millard-Stafford of Georgia Tech's Exercise Science Laboratory (ESL).

The research should benefit athletes preparing for the 1996 Summer Olympics in Atlanta, soldiers stationed in desert environments, construction workers, roofers and others who toil in the heat.

In temperatures topping 90 degrees Fahrenheit, athletes drinking carbohydrate-electrolyte beverages ran considerably faster during the last leg of a 25-mile marathon, Millard-Stafford reported. In fact, she said, test subjects drinking a 7-percent carbohydrate solution trimmed an average of three minutes from their total running time.

Since the mid-1970s, ESL Director Dr. Phillip B. Sparling explained, many athletes have been urged to drink only water or highly diluted glucose solutions during exercise. This rule of thumb was established after studies showed that commercially available carbohydrate drinks tend to remain in the stomach longer than water; leading researchers to believe such beverages might move too slowly through the body. However, Millard-Stafford noted, subsequent studies suggested that carbohydrate drinks most likely make up for lost time by moving rapidly throughout the body after leaving the stomach. Even so, many coaches and athletes apparently still believe



Phillip B. Sparling (second from left), Linda B. Roskopf and Mindy Millard-Stafford measure the oxygen consumption of a runner. (Photo by Phyllis H. Sparling.)

-OVER-

that drinks containing more than 2.5-percent carbohydrate will inhibit hydration during exercise.

But Georgia Tech research challenges the traditional wisdom on fluid intake. Thus far, the researchers have examined the performance and physical condition of 11 long-distance runners, including nine men and two women. (Another eight women will be tested next spring, said Sparling, a professor of Health and Performance Sciences.) Only those who routinely run an average of 40 miles per week were selected for the study. Most of the athletes ran at a seven-minutes-per-mile pace, with the slowest subject averaging 7.8 minutes per mile and the fastest runner averaging 6.2 minutes per mile, Sparling said.

Each subject ran a 25-mile course on two separate occasions during August 1990 in Atlanta. Runners paused every three miles to drink about seven ounces of a commercially available sports beverage containing 2-percent fructose and 5-percent glucose polymer with electrolytes such as sodium and potassium. During the other test run, the subjects received the same amount of fluid in the form of a placebo (artificially sweetened water).

Various physiological measures of physical exertion and conditioning -- such as weight loss, heart rate, oxygen consumption, blood volume changes, body temperature, electrolyte and glucose levels -- were recorded at four points during each run. In this way, Millard-Stafford said, a physician working with the research team could monitor each runner to prevent heat injury.

"If you lose as little as 2-percent of your body weight in the form of fluids, you'll start recognizing a performance detriment, and you'll experience a decrease in strength and endurance," Millard-Stafford noted. "As you lose additional fluid, the danger becomes more and more intensified. When you lose 4-percent to 5-percent of your weight in fluids, your body loses its ability to thermoregulate, and significant dehydration may occur."

Guidelines for fluid intake during exercise in the heat have been established by the American College of Sports Medicine, which advises runners to drink 6-8 ounces of fluid every 2-3 kilometers. However, Sparling said, "This is the baseline, minimum amount of fluid that should be consumed, and the guidelines don't specify any differences in requirements for males or females."

Currently, Millard-Stafford said, Georgia Tech researchers are simply testing the validity of these guidelines, but the group ultimately hopes to establish more specific recommendations for various athletes. Next summer, male and female runners will be compared to determine whether they metabolize fluids at different rates.

Millard-Stafford believes the research is especially timely now that Atlanta has been named to host the 1996 Summer Olympic Games. "The 1996 Olympics are planned for July and August," she said. "To prevent heat stroke or dehydration, we must understand how athletes from various climates around the world will respond to exercising in this environment."

This research is independently funded by a Georgia Tech Biomedical Research Support grant.

###