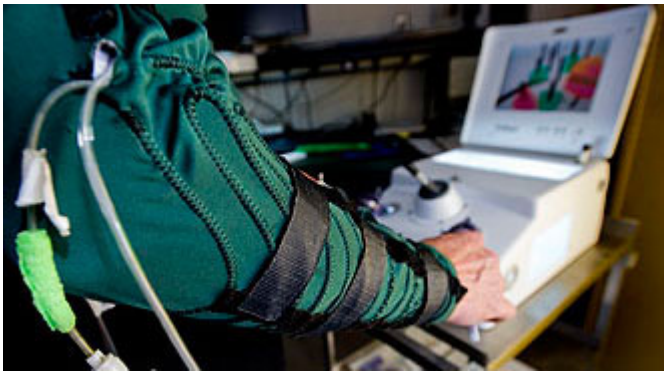
Controlling Body Temperature May Fight Fatigue

November 13, 2009 1:30 AM Kathryn Hobgood
khobgood@tulane.edu

Students at the Center for Anatomical and Movement Sciences at Tulane, led by center director Mic Dancisak, are dressing athletes, surgeons and others in "cooling sleeves" to control body temperature during physical exertion, in a series of experiments to try to delay fatigue.



A cooling sleeve, worn here in a simulation of endoscopic surgery, could delay fatigue in a surgeon's arm during extended procedures. (Photos by Paula Burch-Celentano)

Working under Dancisak, director of the center and a senior professor of practice in the School of Science and Engineering, students are using Liquid Cooling/Warming Garments in sleeve form to apply heat or cold to a specific area of the body. In experiments, they are quantifying the delay in the time it takes to reach a state of functional muscle fatigue.

They are currently analyzing data from their experiments, and early results indicate that temperature control can indeed stave off fatigue.

Dancisak's team first worked with women volleyball players and male baseball

pitchers to determine how temperature control affected the athletes' performances.

In between sets and innings, the players wore the sleeve to cool down and then warm up muscles.

"We noticed that there was about a 30 percent increase in maintenance of power with the volleyball players when they used the sleeves," said Dancisak. "With the pitchers, we simply looked at pitching speed. Without the sleeve, their fastball declined.

Leading a team of students in experiments of Liquid Cooling/Warming Garments is Mic Dancisak, senior professor of practice.

"But when they wore the sleeve in between innings, they were able to maintain their fastball speed through all seven innings. One of the pitchers actually increased his speed."

The research has ramifications for many different types of applications. Most recently, Dancisak's experiments revolve around using the cooling sleeve to delay fatigue in a surgeon's arms during surgery, thereby reducing tremor and delaying fatigue in longer procedures.

"We're starting to look at applying the sleeve technology to more long-term surgical procedures," said Dancisak. "For instance, we could use this technology to selectively control the body temperature of a patient. I can warm the legs and torso,

but if doctors are doing surgery on the arm, I can keep it chilled and reduce blood flow, which is certainly a benefit during surgery."