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Totally Cool

Trainers are turning to a new device to help depleted muscles recover and improve performance

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By Kelli Anderson

When Stanford lab technician Vinh Cao increased his pull-up count from 100 per session to 180 over a six-week period a few years back, Stanford biologists Dennis Grahn and Craig Heller were impressed. When Cao's output jumped to 616 pull-ups in the following six weeks, they knew they were on to something.

Cao, a bodybuilder, credits his rapid strength gain to a device called CoreControl, a Grahn and Heller invention which rapidly cools the body's inner core temperature. All mammals have certain body parts that serve as radiators to dissipate heat. In rabbits, it's the ears; in dogs the tongue. In humans, those specialized vascular areas are in the palms, ears, nose, cheeks and soles of the feet. Grahn and Heller's apparatus accelerates the body's natural heat-dissipating process by cooling a single palm through a process they call Rapid Thermal Exchange (RTX). "We were looking for a way to treat heat illness," says Grahn. "We weren't looking at performance enhancement at all."



49ers linebacker Derek Smith cools off with a quick hit from CoreControl.

Michael Zagaris/Getty Images

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Yet when Cao stuck his hand into an

airtight chamber in a prototype of the device -- the current version looks like a coffee pot attached to an insulated water bottle -- and grasped a water-cooled metal cylinder for about three minutes between sets, he was able to sustain a high number of reps in set after set. Without the cooling, his performance predictably decayed.

Studies have shown that when the temperature of the body's core organs (heart, brain, liver, kidney and lungs) rise, physical and cognitive functions eventually falter. The intuitive solution of applying a cold towel or blowing cool air on the skin can actually exacerbate the problem. When the skin comes into contact with something cold, blood vessels at the surface constrict, trapping heat in the core organs. In extreme cases that can lead to heatstroke. CoreControl breaks the vasoconstriction firewall by combining a steel plate that is cooled to about 70° and a mild vacuum, which enhances blood flow to the hand. The cooled blood then circulates through the rest of the body. "Muscle fatigue is due, to a large extent, to the temperature of the muscle," says Heller. "If you can eliminate that fatigue effect, you can recover quicker, increase your exercise capacity and amplify your conditioning."

In that respect CoreControl mimics some of the effects of steroids without any of the nasty side effects, such as shrunken testicles, back acne or congressional hearings. According to Mark Smith, director of marketing for AVACore Technologies, the Ann Arbor, Mich.-based company that manufactures and sells CoreControl for \$3,295 per unit, the company's biggest client is the military, followed by sports teams and individual athletes, including boxer Shane Mosley, who used the device in training before beating Oscar De La Hoya in a championship bout two years ago. People with multiple sclerosis, who find that even a slight rise in body temperature can result in rapid physical and mental deterioration, are also beneficiaries of this emerging technology. "There is so much we still don't know about possible applications," says Smith.

Charlie Miller, head athletic trainer for the Stanford football team, uses the device primarily to prevent cramps in his players, an application he discovered accidentally three years ago when he was using CoreControl to keep players cool during a humid afternoon game at Boston College. "That really surprised us," says Miller. "You rarely see cramps just go away."

Mark Patten, a 45-year-old ultramarathon cyclist from the Bay Area, swears by CoreControl. He even had his support crew carry one during a recent Race Across America, an eight- to 12-day ordeal in which cyclists are in the saddle about 22 hours a day and exhaustion is inevitable. "The only negative," he says, "was that I had to get off the bike to use it."

Grahn and Heller's goal is to make the next generation of CoreControl more portable and less expensive. The scientists are working with a wet-suit manufacturer to create two versions, one a glove and the other a shoe. Once that happens, Patten predicts, "you'll see marathoners wearing that glove in hot weather like they wear gloves in cold weather. Then I think you'll start to see all sorts of records fall."

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Ice, Ice, Baby

In the continuing quest to put a high-tech spin on everything, Berkeley, Calif.-based CoolSystems has come up with Game Ready, a cold-therapy and compression device that updates the traditional trainers' cure-all, RICE (rest, ice, compression, elevation). The system includes a variety of nylon wraps designed to fit just about every body part and a battery- or AC-operated unit that uses ice and water to apply cold and intermittent pressure on injuries to reduce swelling and help athletes recover more quickly. The basic unit with one wrap sells for about \$2,500; the full system is \$4,500. Seventy-five pro teams, including 25 NFL clubs, use it, as do 137 schools and more than 400 individual athletes, according to VP of sales and marketing Gabriel Griego. "It's a convenient method of delivering ice and pumping action," says Stanford trainer Charlie Miller, who has eight of the units. "It's not a new idea. They just came up with a better mousetrap."

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