CoreControl
Whitney Michalek
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CoreControl is a device developed by Dennis Grahn and Craig Heller of Stanford University that is used to manipulate the core body temperature using RTX (Rapid Thermal Exchange) and accelerate the body’s natural heat dissipation process.

When an athlete is generating too much heat, there can be many side effects such as impairment in performance, increase stress, decreased endurance, heat stroke, or other heat-related illnesses. Humans have specific “radiator-like” regions on the body surfaces that dissipate excess heat from the body core and release it into the environment such as the palms of hands, soles of feet, cheeks, ears, and nose. When metabolism increases (as in exercise), blood is pumped to these regions. If you stay cool, less blood is delivered to the skin for heat dissipation and more blood is available to deliver oxygen and nutrients to the muscles.

CoreControl focuses on these radiator-like blood vessels found in the palm of the hand and using rapid thermal exchange, it takes the heated blood that is being pumped through the body, cools it, and sends the cooled blood back to the body core.

The unit consists of a coffee pot-sized chamber, a cooled metal cylinder (~70°F), and a small vacuum. As the heated blood flows through the arm and into the hand, the user grips the cylinder for 3-5 minutes. A battery operated system pumps ice water to the cylinder and simultaneously applies the small vacuum to the wrist area. The vacuum serves to prevent vasoconstriction. (When the skin comes into contact with something cold, blood vessels at the surface constrict, trapping heat in the organs and can eventually lead to heat stroke). The cooled blood is then sent back to the core of the body.

There are many advantages to this product. It is easy to use, non-invasive, safe, effective, cools quickly, allows athletes to consistently perform at their peak and work longer in extreme environments. There have been no reported negative side effects to this device since it works with the body’s natural adaptations to heating and cooling.

CoreControl was FDA approved in 2003 and currently costs about $3,295. Because of the large price, it has mainly only been purchased and used by the military, professional sports teams, hospitals, and colleges.

The creators of CoreControl hope to be able to develop a device that is more portable, flexible, and disposable as well as cheaper. They are also looking to develop more future applications including cooling and heating to treat hyperthermia and hypothermia, cooling to prevent damage from heat stroke, heating to enhance cancer therapies, etc.

Resources:
1. www.avacore.com
4. www.medgadget.com